

M A R C H 1 9 9 8

Macworld

THE ESSENTIAL MACINTOSH® RESOURCE
www.macworld.com

YEAR'S BEST MAC PRODUCTS

MACWORLD

EDITORS'

TOP PICKS,

page 76

EXPERT GUIDE

Microsoft Repents

Office 98
Makes Up
for Past Sins

PAGE 66





**If you wrestle with color professionally,
get a match with the Blue Hood.**

Introducing the La Cie Electron21™, the monitor with the color-enhancing Blue Hood.

Circle 52 on reader service card

LACIE



Macworld

Features

Cover Story • Expert Guide

66 Microsoft Repents

BY DAVID POGUE Office 98 will render Microsoft jokes significantly less humorous. The company that once took the fun out of computing has put it back. Seriously.

76 The Mac's Brightest Stars

BY MACWORLD STAFF It's been a year of cosmic change. But this year's Editors' Choice Awards prove that the Mac firmament still burns brightly.

LAB TEST

85 Store More Faster

BY BROOKE C. WHEELER Macworld Lab searched ultrawide to find these 11 speedy 9GB Ultra SCSI drives.

LAB TEST

91 Prime-Time Projectors

BY JEFF PITTELKAU Take your show on the road. Macworld Lab evaluates 11 lightweight multimedia LCD projectors.



Driving force: 9GB Ultra SCSI externals, page 85.



Steady Eddy reels in the year's best, page 76.



Create

Print

105 Powerful Teamwork: AppleScript and QuarkXPress

BY DAVID BLATNER Laziness is the mother of invention; AppleScript lets you invent ways to make your Mac work harder for you.

Graphics

112 Harness the Power of Photoshop's Distort Filters

BY CATHY ABES When it comes to applying Photoshop filters, it's not just what you do but also how you do it that counts.

Web

115 Liven Up Your Site with Chats and Conferences

BY JIM HEID Make sure your site is more than just a wide spot in the infobahn. Lure traffic with lively conversation.

Web

120 The Animator's Guide to Good GIFs

BY BARBARA ASSADI AND ARNE HURTY Macworld offers simple tips for creating moving Web sites that don't eat up bandwidth.

Sound

123 Make Mine MIDI

BY CHRISTOPHER BREEN Even if you're not a tunesmith, you can still make use of MIDI, the lean alternative to beefy digital audio.



Good heavens! Microsoft has made a praiseworthy Mac product, page 66.

News

- 24 Mac OS Update Frees Your Hard Drive**
The latest Mac OS release gives you more disk space but could have a nasty surprise for clone owners.

- 25 The Latest from Mac Expo**
Apple reveals its new directions at Macworld Expo in San Francisco.

- 26 Best of Show**
Macworld's editors pick the hottest products introduced at Macworld Expo.

Sneak Peek

- 28 FreeHand 8 Goes Transparent**
New Lens feature is a milestone for illustration software.

- 28 Out of the In-box, into the Trash**
New techniques for reducing junk e-mail.



Yale joins the Poison Ivy League, page 186.

Opinion

- 15 Letters**

- 19 The Vision Thing**
BY ANDREW GORE You could almost call it *Macrosoft* Office 98.

- 186 The Desktop Critic**
BY DAVID POGUE Yale's director of IS has a questionable IQ (Intel quotient).

- 10 How to Contact Macworld**



The HP ScanJet 6100C keeps a low altitude, page 38.

Secrets

- 95 Placing It in the Right Context**
BY TED LANDAU Enjoy the gratuity included in Mac OS 8's contextual menus.

- 99 Quick Tips**
BY LON POOLE Tips, tricks, and shortcuts.

ON THE COVER

Illustration by
Terry Allen

Reviews

- 34** ★★★★★ QuarkXPress 4.0
Page-layout program
- 36** ★★★ RealPC 1.0;
★★★★½ Virtual PC DOS
DOS emulators
- 37** ★★★★½ Power Macintosh G3 desktop;
★★★ Power Macintosh G3 tower;
★★★★ SuperMac S900Base with
Maxpower Pro+ 250
PowerPC 750 systems
- 38** ★★★ ScanJet 6100C
Flatbed scanner
- 40** ★★★★★ LaserJet 4000 TN;
★★★★½ LaserWriter 8500
Workgroup printers
- 42** ★★★ Lightning-PCI;
★★★ Romulus;
★★★ SX-4
Serial-port multipliers
- 44** ★★★★★½ QuickTime VR Authoring Studio
QuickTime VR development software
- 46** ★★★★★½ Interpol
All-in-one firewall solution
- 48** ★★★★★½ FreeStyle 2.01;
★★★★½ Metro 3.5
MIDI sequencers
- 50** ★★★★★ Boris FX 3.0.3;
★★★★½ CineLook Broadcast 1.0;
★★★★ Eye Candy 3.0 for After Effects
Video-effects software
- 52** ★★ Emblaze Creator 2.5;
★★★★ mBed Interactor 1.1;
★★★★ WebMotion 1.0
Java-based Web multimedia tools
- 54** ★★★★★½ InterJet 200
All-in-one Internet solution
- 55** ★★★★★½ DenebaCAD 1.0.2
3-D-drafting software
- 57** ★★★★★½ MacAdministrator 1.6
Classroom Mac administration
- 58** ★★★ WebPainter 2.0
Web animation editor
- 60** ½ Emblaze WebCharger
Graphics utility
- 62** ★★★★★ Myth: The Fallen Lords
Real-time wargame
- 62** ★★★ Shadow Warrior
3-D shoot-'em-up game

Your Mac



What Newer Technology does is simple: we sell products that make Macs™ faster and better.

Many times upgrading your existing Mac is smarter than buying a new one. For instance, if you're looking for the absolute fastest Mac you can own, then you have to buy a MAXpowr™ G3, because no shipping system from

Apple can outperform it. Or if you're looking for a lot of bang for

the buck, the MAXpowr Citation is the way to go. It lets you replace your older processor with a fast 604e for as little as \$359*. That's right, you can bring your machine out of the stone-age and make it as fast as the new top-of-the-line Macs without spending tons of cash for a new system.

Check Out These Performance Specs	
MAXpowr G3 275	1077
PowerMac G3 266	895
MAXpowr G3 266	978
PowerMac G3 233	785
MAXpowr G3 250	800
PowerMac 9600/300	733

Call 1-316-943-0222 for more info
or surf to www.newertech.com • email: info@newertech.com

Your Mac
With
A Newer
Upgrade



After all, your basic system is still fine; technology has just left
MW ★★★★★ your processor in the dust. So keep the box, save
the cash, and just give your Mac a brain transplant.

Plus, with Newer Technology you're buying from a company
you can trust. We're not some dinky company being run out of a
garage. In fact, we've been engineering and selling **Macworld**
products that make Macs better since 1984. So you can be

assured that you're going to get top-of-the-line products, great
service, knowledgeable support and total compatibility.

So come by our website and see which processor is right for
your particular machine. No matter what kind of a Mac **MacII**
or Mac-compatible you're using, Newer Technology has a product
that can make it better.

Let us prove that sometimes Newer™ is better than new.



Sometimes Newer™ Is Better Than New.

Circle 83 on reader service card

EDITOR IN CHIEF

Andrew Gore

EXECUTIVE ASSISTANT

Patricia Carberry-Harris

EDITORIAL

EDITOR

Galen Gruman

EXECUTIVE EDITOR

Carol Person

SENIOR EDITOR/NEWS

Stephen Beale

SENIOR EDITOR/FEATURES

Elizabeth Dougherty

SENIOR EDITOR/REVIEWS

Anita Epler

SENIOR EDITOR/DEPARTMENTS

Nancy Peterson

SENIOR TECHNOLOGY EDITOR

Henry Bortman

SENIOR ASSOCIATE EDITORS

Cathy E. Abes,

Linda Comer,

Jason Snell,

Katherine L. Ulrich

ASSOCIATE EDITORS

Allyson Bates,

Scholle Sawyer,

Brooke C. Wheeler

EDITORIAL LAB COORDINATOR

Shawn S. J. Sadler

CONTRIBUTING EDITORS

David Biedny, Christopher Breen, Bruce Fraser, Ted Landau,

Deke McClelland, David Pogue, Lon Poole, Joseph Schorr,

Franklin N. Tessler

LAB

LAB DIRECTOR

Jeffrey S. Pittelkau

ASSISTANT LAB DIRECTOR

Susan Silvius

SENIOR LAB ANALYSTS

Jeffy K. Milstead,

Kevin Mitchell

ASSOCIATE LAB ANALYST

Gil Loyola

COPY EDIT

MANAGING EDITOR

Claire H. Breen

COPY CHIEF

Paul-Michael King

SENIOR COPY EDITOR

Jon Zobenica

ART AND DESIGN

DESIGN DIRECTOR

Eleanor Leishman

ART DIRECTOR

Sylvia Chevrier

ASSOCIATE DESIGNERS

Martha Katt,

Michael Rattary

LAYOUT ARTIST

Jackie Goodman

Juice Up Your Mac!

3D
Sound/Video
OrangePC 550
4MB VRAM, 512KB L2 Cache
Supports AMD K6 MX, Wavetable Sound



Squeeze OrangePC[®] into Your Apple!

Our newest Windows[®] compatibility card, the OrangePC[®] 550, when armed with the AMD-K6[™] or Intel[®] Pentium 233 MMX[™], provides the highest performance solution on the market.

Competitive benchmarks of a software emulator running on a Power Macintosh G3 (2.3 Business Winstone) versus the OrangePC 550 (15.9 Business Winstone) demonstrate the phenomenal power of hardware Windows compatibility.

The new OrangePC 550 has a stunning set of exclusive features including accelerated 3D video, 3D wavetable sound, 512 KB L2 cache, and 4 MB of video SGRAM – all leading-edge stuff!

And the OrangePC's software application has made quantum strides as well. It sports 32-bit drivers

facilitating CD-ROM long file names and NDIS3 networking. Our exclusive SnapshotSM feature allows a Windows screen to see the Mac environment and the Mac screen to display the Windows environment in a Mac window. It's like a "picture in picture" on your TV!



The technical specs:
OrangePC comes as 7" or 12" PCI cards (also

supports "all in one" Macs); up to 233MHz MMX Intel, Cyrix[®] or AMD-K6; expandable RAM to 256 MB; up to 512 KB pipeline burst L2 cache on 550; parallel port (for PC dongles); 2 high speed serial ports; game port; 3D wavetable sound in/out; 2/4MB video memory.

Call us today to...

Squeeze an OrangePC into Your Apple!



"18 Years of Innovation and Excellence"
1400 N. Lakeview Ave., Anaheim, CA 92807
(714) 779-2772 www.orangemicro.com

NOTHING
COMES CLOSER
TO REALITY.



RASTEROPS®

	CRT size (viewable)	Dot pitch	Maximum resolution	MSRP
Mc 801 HR	21 inch (20")	.22 mm (h) .16 mm (v)	1600 x 1200 @76 HZ	\$1,959
Mc 801	21 inch (20")	.22 mm (h) .16 mm (v)	1600 x 1200 @71 HZ	\$1,749
Mc 7515	19 inch (18")	.22 mm (h) .14 mm (v)	1600 x 1200 @75 HZ	\$1,149
Mc 6315	17 inch (15.9)	.22 mm (h) .16 mm (v)	1280 x 1024 @78 HZ	\$749
Mc 6215	17 inch (15.9)	.28 mm	1152 x 870 @75 HZ	\$559

If you're looking for the best value in an award-winning, high performance monitor, follow Macworld's lead. Or PC World's. Or a host of others. And check out the new Hitachis.

Our new 19" Mc 7515 is an excellent example. Compared to Sony's 20sell, it's an inch smaller, but the Sony costs 74% more for comparable specs and performance.

So if you want a monitor that your eyes can appreciate as much as your wallet, your choice is simple. Hitachi. Call for the full story and your nearest retailer.
800 441-4832.



CDW 800 800-4239 Club Mac 800 258-2622 DTP Direct 800 311-7079 Express Direct 800 925-6777 Mac Connection 800 800-2222 Mac Mall 800 222-2808 Mac Market 800 223-4622 Mac Warehouse 800 255-6227 Mac Zone 800 248-0800 PrePress Direct 800 443-6600

HITACHI-NSA, 200 Lowder Brook Drive, Westwood, MA 02090 TEL: 800 441-4832. Faxback: 800 555-8552. www.nsa-hitachi.com

Circle 74 on reader service card



HITACHI

Did you get your ?

Available Now!

VST Zip™ 100 Drive

for your:

G3, 3400,
1400

and 190/5300

Series PowerBooks®



VST
TECHNOLOGIES
Incorporated

Available At:

Mac Mall
1-800-222-2808

The Mac Zone
1-800-248-0800

MV02

MICRO CENTER
THE COMPUTER DEPARTMENT STORE®

MacConnection
800-998-0040

ClubMac®
1-800-258-2622

MacWAREHOUSE
1-800-255-6227

Questions? Call VST @: (978) 263-9700

Iomega, the Iomega logo, Zip, and The Capacity To Do More are trademarks of Iomega Corporation. All other trademarks are property of their respective holders. Iomega patents protected by patent applications pending in the US and other countries.

Circle 73 on reader service card

Macworld

PRESIDENT AND CEO

Colin Crawford

ASSISTANT TO THE CEO

Sharon Sanderson

CHIEF FINANCIAL OFFICER

Stephen Daniels

FINANCIAL ANALYST

Eos de Feminis

VICE PRESIDENT OF HUMAN RESOURCES

Shelly Ginenthal

EMPLOYEE RELATIONS MANAGER

Marisa Chow

Macworld is a publication of Mac Publishing, L.L.C.

DISPLAY ADVERTISING SALES

VICE PRESIDENT, SALES, & PUBLISHER Matt Sweeney (415/978-3271)

NATIONAL SALES DIRECTOR Steve Plevin (415/978-3138)

SALES/MARKETING COORDINATOR Nancy Galanty
(415/978-3124)

WESTERN ADVERTISING DIRECTOR Karl Elken (415/978-3155)

ACCOUNT EXECUTIVE Christine Wong (415/978-3192)

NATIONAL ACCOUNTS MANAGER Liz Pabón (415/978-3192)

ACCOUNT EXECUTIVE Jessica Ross (415/267-1799)

ADMINISTRATIVE ASSISTANT Jesse Wadhams

NATIONAL ACCOUNTS MANAGER Sara Culley (970/327-4499)

ACCOUNT EXECUTIVE Margaret Level Green (415/267-4577)

EASTERN ADVERTISING DIRECTOR Cynthia Ramsey (973/243-1197)

NATIONAL ACCOUNTS MANAGER Paul Bonarrigo (508/533-4020)

ACCOUNT EXECUTIVE Jo Zotterelli (516/277-4134)

RESEARCH

RESEARCH DIRECTOR

Linda Lawrence

SENIOR RESEARCH ANALYST

Phillip Hibbert

MARKETING

VICE PRESIDENT, MARKETING

Vickie Welch

MARKETING MANAGER

Renée Bula

SENIOR TRADE SHOW AND EVENTS MANAGER

Anna Noetzel

CREATIVE SERVICES MANAGER

Kelvin Gee

PRODUCTION

VICE PRESIDENT OF MANUFACTURING

Anne Foley

PRODUCTION DIRECTOR

Cynthia Neustadt

ASSISTANT PRODUCTION MANAGER

David W. McAferty

MANUFACTURING TECHNICAL DIRECTOR

Clayton Haberman

DIGITAL AD COORDINATORS

Brian Mullin,

Mark Van Slyke

ONLINE

PUBLISHER

Jeff Julian

NATIONAL ACCOUNTS MANAGER

Ed Ramirez

ACCOUNTS MANAGER

Nicholas Harvey

MEDIA COORDINATOR

Jamila Johnson

EDITOR

James S. Bradbury

SHAREWARE EDITOR

Philip W. Dyer

ONLINE PRODUCTION EDITOR

Roxanne Gentile

ASSISTANT CONTENT ENGINEER

Jessica Graves



what you do:

redraw, stress
scroll, stress
render, stress
rasterize, stress
model, stress
filter, stress . . .

what we do:

make all of the
above happen
faster than you've
ever dreamed.
(without the stress)

From the makers of TwinTurbo® come the powerful, perfectly balanced graphics board solutions you've been hoping for. ix3D boards eliminate those long, gut-wrenching moments spent waiting for your computer to execute the 2D, 3D and video functions on which your creativity depends. ix3D boards are powered by IXMICRO's new TwinTurbo 128-3D for raw graphics power you never thought possible. Look for us at your favorite retailer, or check out our Web site for more details. And stop stressing.

ix3D™

www.ixmicro.com



ix3D Ultimate Rez

for graphics experts who need to drive today's largest monitors at extreme resolutions and color depths - while maintaining fast, ergonomic refresh rates. Ideal for 2D, 3D graphics and CAD applications like Adobe Photoshop, Quark Express, Lightwave 3D, and Microstation.



ix3D Pro Rez

optimizes the performance and value for users who need uncompromising graphics power and who routinely operate 17-19" monitors at moderate resolutions like 1152 x 870. Video upgrade available.



ix3D Mac Rocket

provides home and office users with a blast of pure 128-bit 2D and 3D graphics power, adding speed and performance to all common operations. Video upgrade available.

AnthroCarts!®

Configure them the way you want!



See all these and *more* in our free catalog, then call us direct to order. We'll ship to you the very next business day!



800-325-3841
6:00 AM to 6:00 PM PST, M-F



Anthro Corporation®
Technology Furniture®
Tualatin, OR 97062
Fax: 800-325-0045
Japan: 03 (Tokyo)-3947-2735
www.anthro.com



Lifetime Warranty. Dozens of shapes and sizes, over 75 accessories.
Since 1984. Prices from \$299. GSA contract. Available for OEM applications.

Macworld

HOW TO CONTACT MACWORLD

Subscription Questions

Phone: 303/665-8930
Fax: 303/604-7455
U.S. Mail: Subscription Services
P.O. Box 54529, Boulder, CO 80322
America Online: Keyword Macworld
World Wide Web: <http://subscribe.macworld.com/service/>

Reprints and Permissions

You must have permission before reproducing any material from *Macworld*. Write to Macworld, Reprints and Permissions, 501 Second St., San Francisco, CA 94107; include a phone number. To order reprints of your company's editorial coverage, call 800/217-7874.

Back Issues of Macworld

Back issues (subject to availability) are \$7 per issue for U.S. delivery (\$12 overseas); prepayment in U.S. funds is required. Send check or money order to Back Issues Department, Ziff-Davis Inc., P.O. Box 53131, Boulder, CO 80322-3131.

Macworld in Microfilm

Macworld is available on microfilm and microfiche from UMI, 300 N. Zeeb Rd., Ann Arbor, MI 48106-1346; 313/761-4700.

Macworld Editorial

The editors of *Macworld* welcome your tips, compliments, or complaints. We are unfortunately unable to look up stories from past issues; recommend products; or diagnose your Macintosh problems by phone, e-mail, or fax. Contact Apple toll-free at 800/538-9696, ext. 500, for information on user groups in your area.

Our offices are located at 501 Second St., San Francisco, CA 94107; 415/243-0505, fax 415/442-0766.

LETTERS TO THE EDITOR Direct all comments and suggestions regarding any aspect of the magazine to letters@macworld.com. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all submissions. All letters published in *Macworld* or Macworld Online become the property of Macworld.

QUICK TIPS Send your questions or tips on how to use Mac computers, peripherals, or software to the attention of *Macworld*, *Quick Tips*, 501 Second St., San Francisco, CA 94107; fax 415/442-0766; e-mail quicktips@macworld.com. Please include your name, address, and telephone number.

Macworld is a publication of Mac Publishing, L.L.C. *Macworld* is an independent journal not affiliated with Apple Computer, Inc. *Macworld*, *MacUser*, *MacWeek*, *Macworld Interactive*, *Macworld Shopper*, *MW*, *MW Lab*, *MW Shopper*, *The Desktop Critic*, *Expert Graphics*, *Quick Tips*, *Star Ratings*, *Buyers' Tools*, *Streetwise Shopper*, and *Conspicuous Consumer* are registered trademarks of Mac Publishing, L.L.C. Apple, the Apple logo, Mac, and Macintosh are registered trademarks, and *MacLetter* and *PowerBook* are trademarks, of Apple Computer, Inc. Printed in the United States of America. Copyright © 1998 Mac Publishing, L.L.C. All rights reserved.



The most expandable Mac OS based system on the planet!

233MHz Complete System

\$2595

**The most expandable
Mac OS based system
on the planet!**



**32MB RAM/2.1GB HD
12X CD-ROM/4MB Video
Keyboard & Mouse**

FREE Upgrade G3

Purchase this
233MHz/604e
Tsunami system and
receive a **FREE** upgrade
to an Arthur 750/G3 233MHz
512K backside cache **

200 MHz 603e Complete System

\$999

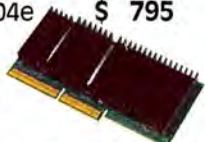
XB Series Desktop^Δ

Base system starting at:
603e 200MHz \$585
604e 200MHz \$775



**16MB RAM / 1.2GB HD
16X CD-ROM / 2MB Video
Extended Keyboard & Mouse
&
14" Mactell Color Monitor**

Processor		Video Cards		Memory	
233MHz 750/G3 card **	\$ 925	2MB Mactell Vision 3D	\$ 125	2MB 3.3V EDO RAM	\$ 69
512K backside cache		4MB Mactell Vision 3D	\$ 157	64MB 3.3V EDO RAM	\$ 169
266MHz 750/G3 card **	\$ 1095	8MB Mactell Vision 3D Pro	\$ 595	32MB 5V FP RAM	\$ 69
512K backside cache		2MB IMX TwinTurbo	\$ 225	64MB 5V FP RAM	\$ 169
275MHz 750/G3 card **	\$ 2495	4MB IMX TwinTurbo	\$ 329	32MB SGRAM/G3	\$ 100
1MB backside cache 1:1 ratio		8MB IMX TwinTurbo	\$ 649	64MB SGRAM/G3	\$ 279
300MHz 750/G3 card **	\$ 2595	4MB IX3D Mac Rocket	\$ 235	128MB SGRAM/G3	\$ 510
1MB backside cache 1:1 ratio		4MB IX3D Pro REZ	\$ 299	2MB Video SGRAM	\$ 65
PoweJolt 200MHz-604e	\$ 295	8MB IX3D Ultimate REZ	\$ 599		
PoweJolt 233MHz-604e	\$ 449	4MB IMC TV/Tuner w/video	\$ 285		
PoweJolt 250MHz-604e	\$ 795	4MB SGRAM ProRez	\$ 299		



the most customizable mac system.



Mactell Corporation is an authorized MacOS system sublicensee and will continue to fulfill your needs in the future. Mactell offers a complete line of third party peripherals, thirty day money back guarantee on standard configurations, and up to three-year warranty with all systems. Major accounts, educational institutions and government agency purchase orders accepted. Contact Mactell to establish an account. Dealer, Integrator, Distributor, and leasing inquiries welcome.

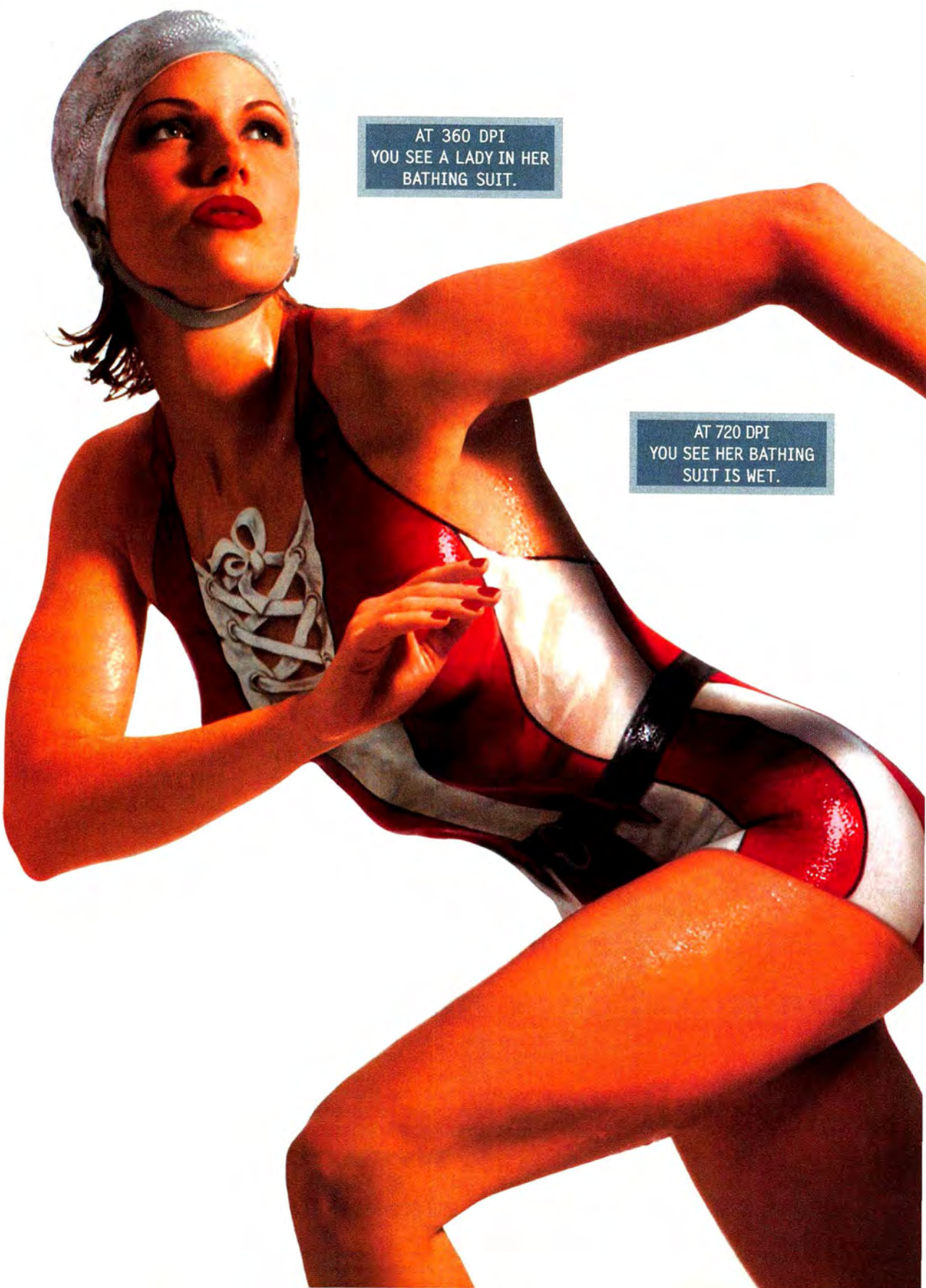
www.mactell.com
1 888 mactell

Mactell Corporation • 7000 Cameron Rd., Austin, Texas 78752 888-622-8355 • 512-323-6000 • Fax 512-323-6394

Mactell and Mactell Logo are registered trademarks of Mactell Corporation. All other trademarks and product names used herein are the property and/or registered property of their respective owners. Mactell is not responsible for typographical and photography errors. Prices, specifications and availability subject to change without notice. Leasing terms and credit approval provided by third party. Monthly lease payment based on 36 month term. † Extended warranty and extended on-site plans available. Call for details. Δ Computer chassis may not match exactly shown. ** G3 upgrade is supplied as a third party upgrade and is not support ed or certified by Apple Computers.

Circle 75 on reader service card

MW03



AT 360 DPI
YOU SEE A LADY IN HER
BATHING SUIT.

AT 720 DPI
YOU SEE HER BATHING
SUIT IS WET.

YOU'VE GOT TO SEE IT IN

EPSON

COLOR.

AT 1440 DPI
YOU SEE HER BATHING
SUIT IS PAINTED ON.



An amazing paint job makes you think it's a bathing suit. These astonishing new printers let you know it's not. 1440 x 720 dpi – for incredible detail. Micro Piezo™ Technology – for a smaller, more consistent dot. All from our exclusive PerfectPicture™ Imaging System. You'll get Photo Quality color and laser-sharp black text – print quality that's already won 39 major awards, including PC Computing's 5 Star Rating. In standard format or wide format. PC/Mac compatibility. Optional internal Ethernet. Up to 8 ppm black/7 ppm color on the EPSON Stylus® Color 800. Plus a 2-year warranty. Call 1-800-GO-EPSON (ask for operator 3010) or visit us at www.epson.com for more details. For every detail, look at the output.

INTRODUCING THE WORLD'S FIRST 1440 DPI COLOR INK JET PRINTERS.



EPSON Stylus® Color 800. High-performance business printer.

EPSON Stylus® Color 1520. The versatile wide-format printer.

Set Your World in Motion



New Bryce 3D lets you create incredibly realistic, fully animated 3D worlds!

Real-world atmospheric effects. Set every part of your 3D world in motion, including clouds, the phases and positions of heavenly bodies, star fields, and fog and haze that react realistically to light intensity and color.

Complete animation control. Scale, resize, or position object paths in seconds, then link them to create motion. Set camera and lights to track objects automatically.

Unbelievably realistic terrains. Paint height values for peaks, valleys, plateaus, and erosion, then animate the entire scene. For instant results, check out the real-time, rotating 3D preview.

Fully animatable materials and textures. Picture brick melting into water or a snow capped mountain emerging from winter into spring—now you can make it happen!

Get Bryce 3D and set your world in motion, the easy way!



Bryce 3D

IT MOVES

© 1997 MetaCreations Corp. All rights reserved. Bryce is a registered trademark of MetaCreations Corp. Scene rendered entirely in Bryce 3D.

Attention Bryce Owners!
Upgrade Today for Only \$99

800.846.0111 Dept. 126
www.metacreations.com



MetaCreations

The Visual Computing Software Company

Circle 5 on reader service card

Letters

The Lowdown on Tune-Ups

JOHN RIZZO'S "TIMELY MAC TUNE-Ups" was the clearest and most useful piece on Mac tune-ups I've seen anywhere (December 1997). Rizzo warned that Zip cartridges are not forever and advised against storing data on them for more than a few years. Does this apply to floppy disks as well?

JULES OLDER
Albany, Vermont

Floppy disks also go bad after a few years. If you get the message "disk error" when you try to read from or copy to a floppy, it's time to throw it away. Unlike with Zips, I wouldn't try to reformat (or reinitialize) a floppy.—John Rizzo

I HAD MIXED FEELINGS ABOUT JOHN Rizzo's "Timely Mac Tune-Ups." The parts referring to data corruption, repairing invisible files, and reloading or upgrading system software and drivers concern me, because if the software is correctly written, why should these items become corrupted?

Certainly people who constantly load and delete software need to purge their machines occasionally and upgrade system software. But those of us who utilize a core group of programs shouldn't need the tune-ups you call for, and nobody should have to put up with file corruption that has no external cause (such as a power failure).

My office is a Wintel office, and those Pentiums get a lot of hard use with no "tune-ups"; they survive power failures, are operated by barely computer-literate personnel, and work well month after month. We ought to be able to say the same about our Macs.

CHARLES PALENZ
Camp Hill, Pennsylvania



The nature of hard-disk storage can lead to corrupted data regardless of how well or poorly the software stored on it is written. A hard drive stores data on a delicate magnetic medium that is affected by a variety of factors, such as magnetic fields generated by office equipment and lighting, and is not at all permanent. Windows machines also need regular tune-ups, as evidenced by the fact that Symantec sells many more copies of Norton Utilities for Windows machines than for the Mac. Without tune-ups, all computers—Macs and Windows machines alike—suffer from memory and file fragmentation, slow down, and are more likely to crash. In fact, many crashes users attribute to software are actually caused by easily fixable hard-disk problems.—J.R.

THANK YOU FOR A VERY INFORMATIVE article. I have practiced the techniques John Rizzo described for a few years and have enjoyed relatively crash-free Macintosh computing ever since. I noticed that you didn't mention a few tricks I have seen published elsewhere,

including clearing the PRAM and deleting selected preferences files. What are the conditions under which these tricks should be done, and are they still valuable in OS 8?

JEFFREY A. SPEIR
La Jolla, California

Clearing, or "zapping," the parameter RAM (PRAM) and deleting preferences files weren't mentioned in the story because they aren't things you need to do on a regular basis. These are techniques for fixing problems. You don't want to do them regularly because both actions reset control panels and application settings back to their defaults.

Both techniques still work in Mac OS 8. You can zap the parameter RAM by holding down the P, R, ⌘, and option keys immediately after you hear the start-up tone. And as before, new preferences files for control panels and applications are created after you remove them from the Preferences folder (in the System Folder) and restart.—J.R.

The Ongoing Debate

GALEN GRUMAN'S "QUARKXPRESS versus PageMaker" gives short shrift to Adobe PageMaker's scripting language (December 1997). Sure, XPress supports AppleScript—but the difficulties of dealing with the syntax require a real computer programmer. PageMaker has the advantage of an integrated scripting environment with an English-like language even novice users can understand. Scripts can overcome many of PageMaker's limitations (such as character-based styles), and the convenient Scripts palette provides an environment in which average users can customize their software without spending money on expensive XTensions. *continues*

CORRECTIONS

- *We incorrectly referred to the company MacSourcery as SoundSorcery ("Make Your Site Sing," December 1997).*

Dozens of free scripts are available online at the PageMaker Scripting Center, at www.svprint.com/pmscripting.html.

MARC ZEEDAR
Scotts Valley, California

I USE BOTH QUARKXPRESS AND PAGE-Maker extensively, and I prefer XPress over PageMaker for several reasons that were not pointed out in Galen Gruman's article. Often articles don't mention the small things that make a big difference when you're doing actual work.

One incredible timesaving feature XPress has is the ability to scale a text block and its type (size, leading, spacing, and so on) proportionally with the scale operation. I can't tell you how many times I've used this and what a wonderful timesaver it is. In PageMaker you have to manually resize and readjust everything. When you're designing a layout, functionality such as this is a must. This kind of feature is what makes XPress superior to PageMaker, and why most professionals prefer it.

CHRIS TYLER
Kirkland, Washington

Passionate for PowerBookUser

THANK YOU, THANK YOU, THANK YOU for *PowerBookUser* (December 1997)! This is some of the best stuff I've seen yet in your magazine. I recently acquired a PowerBook 3400c and thought life couldn't be better until I read *PowerBookUser*. Please keep this feature going strong. Better yet—how about a whole magazine called *PowerBookUser*? I'll buy a lifetime subscription.

MARK WHEELER
Visalia, California

Sagging Support at Apple

I JUST HAD THE UNPLEASANT SURPRISE of discovering that Apple will no longer provide free technical support for systems purchased before April 1996. I was told Apple had "redefined" support

and what it means. This is in violation of the introductory material that was included with my Performa 640CD, which clearly states that I will have free access to "a trained staff" for all of my technical problems.

I cannot express how angry this makes me. I love my Mac, but I don't think I can bring myself to purchase another one. I understand that Apple has its problems, but to blatantly disregard a previous agreement like this is inexcusable. What next—the one-year warranty is only good for a month?

Hopefully you can enlighten your readers about this new policy. I am sure many of them will be unaware of it until they attempt to call for support and that they will be equally upset.

CHRISTOPHER RICHARDS
Antioch, Tennessee

Something Missing in OS 8?

SO THE GRAPHICS IN MAC OS 8 (*THE Desktop Critic*, December 1997) are tidier; the platform is slick and stable; and the menu windows click down and pop up and, for all I know, run around and do tricks—but there is still no keystroke command for Save As!

Is there some big obstacle in the way? Or do developers think Save As is a command nobody uses often? I use it ten times as often as Save, especially when I'm cranking out dozens of almost identical Web-site buttons. C'mon now, guys, deliver and make it quick—my mouse hand isn't getting any younger.

WILL OWEN
Nashville, Tennessee

Feeling Misled

YOU LET US DOWN! SHORTLY AFTER reading "Print It" (November 1997) I upgraded my Macintosh system and purchased an Epson Stylus Color 600 printer to go along with it. After all, your review gave the printer four stars and a high recommendation.

The box proudly proclaimed "Macintosh and Windows Compatible," as did the advertising literature at the reseller store where I purchased it. I rushed home, followed the "Quick Setup Guide," loaded the driver software, . . . and discovered that it printed only pages of

zeros. Sure enough, I discovered buried in the manual, "Make sure AppleTalk is disabled, and you are using a standard Apple System Peripheral-8 cable."

A call to the dealer and Epson customer service revealed the sad truth: the Stylus Color 600 does not support AppleTalk. So much for my AppleTalk-networked office. I can still keep AppleTalk on by plugging the printer into the modem port, but the Stylus Color 600 can't serve as a network printer.

Shame on you, *Macworld*. You should have advised us of this. And shame on Epson for calling the printer Macintosh compatible when it should really have said, "partly compatible, but not networkable." (The Epson Web site now admits that the 600 is a "single-user" printer.)

Please take more care in the future and advise your readership when all is not what it appears to be.

BILL PALMER
Paisley, Ontario, Canada

Singing Site Switch

I ENJOYED CHRISTOPHER BREEN'S article about audio for the Web, but it seems he had it backward about bit-depth reduction resulting in a loss of "brightness" and resolution reduction causing graininess and indistinctness.

Bit-depth reduction limits the dynamic range of the music, causing a grainy sound, whereas reducing resolution (say, from 44.1kHz to 22kHz) cuts off the highest frequencies, causing a loss of brightness.

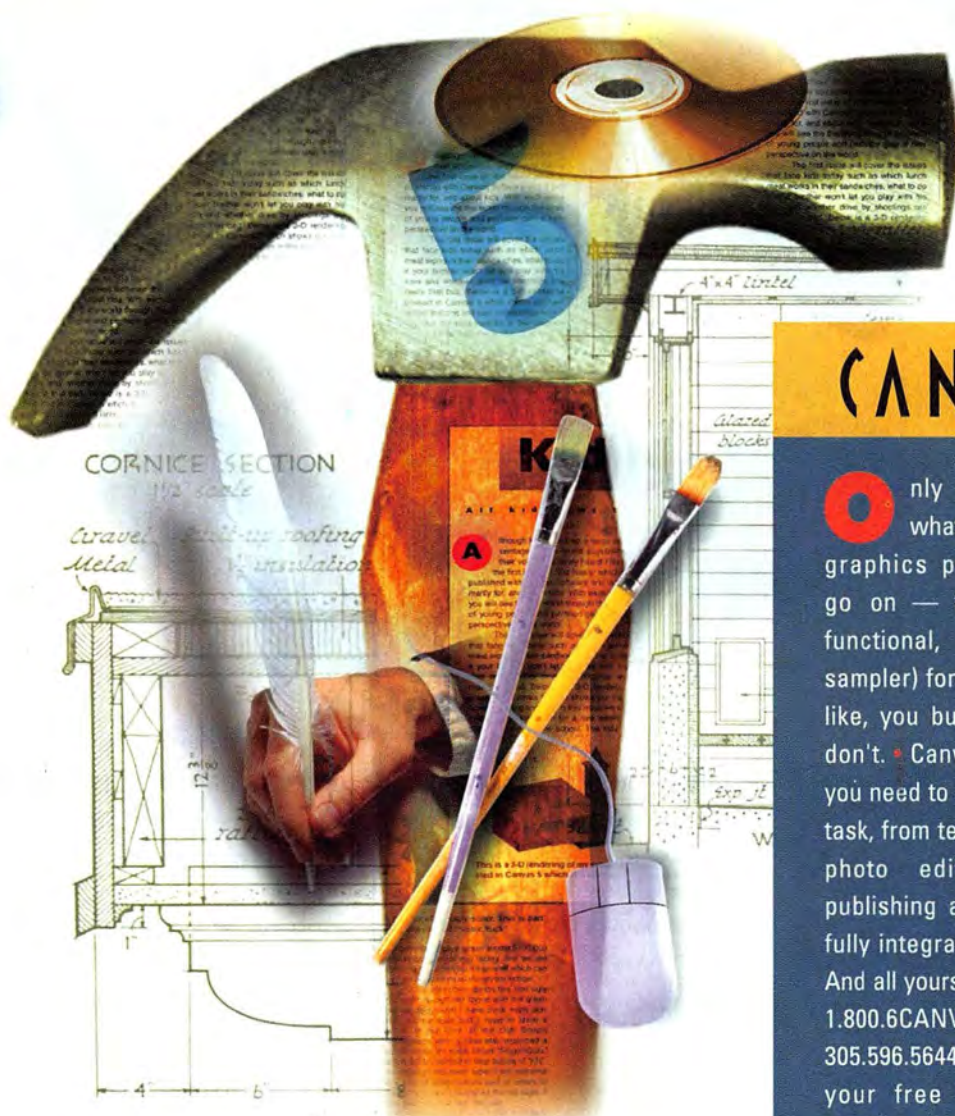
RICK JOBE
Huntsville, Alabama

Rick, you're absolutely right; the effect of these reductions got switched around. As you state, reducing resolution decreases brightness, not the other way around.—Christopher Breen m

Letters should be sent to *Letters*, Macworld, 501 Second St., San Francisco, CA 94107; via fax, 415/442-0766; or electronically via CompuServe (70370,702), MCI Mail (294-8078), America Online (keyword Macworld), AppleLink (Macworld1), or the Internet (letters@macworld.com). Include a return address and daytime phone number. Due to the high volume of mail received, we can't respond personally to each letter. We reserve the right to edit all letters. All published letters become the property of *Macworld*.

The World's First Do-It-Yourself Ad.

**Rather than try and sell you on
Canvas 5, we invite you to sell yourself with
a 30 day free trial offer.**



CANVAS 5

Only one person knows what you want in a graphics program: you. • So go on — try Canvas 5 (fully functional, not some weenie sampler) for 30 days, free. If you like, you buy. If you don't, you don't. • Canvas 5 has everything you need to tackle any graphics task, from technical drawing and photo editing, to desktop publishing and web design. All fully integrated. All easy to use. And all yours for the asking. • Call 1.800.6CANVAS (622-6827) or 305.596.5644 ext. 2, and ask for your free Evaluation CD or visit our web site at www.deneba.com/macworld/ to download it gratis. And if you've already sold yourself, visit your favorite reseller or call us and pick up a copy today.

© Copyright 1997 Deneba Software. Limited time offer valid only in North America. This ad was made using nothing but Canvas 5. Any questions?



Circle 57 on reader service card

Introducing P²C²™ the PANTONE Personal Color Calibrator™

HOW THE WORLD AGREES ON WHAT IT SEES



PANTONE Personal Color Calibrator™
Color Accuracy for your Monitor

Achieve perfect color balance in less than 3 minutes! Finally, an inexpensive and easy way to match your on-screen images to your printed output and the Internet, too. The P²C² color calibrator couldn't be simpler to use; just install the software and answer a few simple questions about the way you see color. P²C² then creates sophisticated color profiles (ICC*) for you. Suddenly, and without compromise, your printed images look exactly like they did on your screen, precisely the way you designed them.

PANTONE Personal Color Calibrator
Works with Mac or Win95/NT and all major applications.
\$59⁹⁵

To order:
call **888-PANTONE**
or visit www.pantone.com.

PANTONE®

*ICC profiles are the powerful industry standards for color calibration and matching between different devices.
All trademarks (TM) and registered trademarks (®) used herein are either the property of Pantone, Inc., Sonnetech, Ltd. or other companies.
Process color reproduction may not match PANTONE®-identified solid color standards. Refer to current PANTONE Color Publications for the accurate color. © Pantone, Inc., 1997.

Circle 15 on reader service card

The Vision Thing

by Andrew Gore

Lessons Learned

MICROSOFT PAYS TRIBUTE TO THE MAC'S SUPERIORITY WITH OFFICE 98

IT IS OFTEN SAID THAT IMITATION is the sincerest form of flattery. In Microsoft's case, it is also the most effective form of copyright infringement.

It's no secret that over the years Microsoft has "borrowed" from the Macintosh interface to improve Windows' ease of use. PC industry pundits who can (or care to) remember where Microsoft got much of the inspiration for its advances usually say the OS behemoth is simply acknowledging the superiority of the Mac experience, as if we in the Mac market should appreciate this. Microsoft has almost *acknowledged* the Mac into a historical footnote, and like a feudal lord taking over a subject's well-tended farmland, it seems to think it's showing us favor by letting us stay in the farmhouse. I have wished many times that Microsoft would stop trying to foist its Mac-like user experience upon Mac users, which it does mainly through its near-monopoly of office productivity software. (Microsoft hates it when journalists use the "M" word, but I'm at a loss for how else to describe Microsoft Office's dominance.)

I never expected to have my wish granted—that's why I may be even more surprised than David Pogue seems in this issue's "Microsoft Repents: Office 98 Makes Up for Past Sins." I know it's hard to imagine, but the latest incarnation of Office is a *real* Mac product, one that looks like it's actually designed for the Mac.

Shameware

What brought about this remarkable turn of events? While Office 4.2 sales were strong, a lot of Mac users chose not to install all the apps, especially Word 6.0, cheating Microsoft out of hundreds of thousands of upgrades (and I think we all know how Bill Gates feels about losing money). Even more important, Microsoft was publicly embarrassed by how the Mac market received Office 4.2. So what

evidence do I have that Microsoft was shamed into making Mac Office 98 a true Mac application suite?

While a good Mac upgrade will earn Microsoft more revenue, it also costs a lot to develop. Hiring a dedicated Mac development team, plus doing tons of research and beta testing, can't have been cheap. And there was the company's public reaction to a column I wrote when Office 4.2 first shipped in November 1994, proclaiming that the product, well, sucked. Within days, Microsoft representatives demoing Office 4.2 for two major Mac user groups denounced my characterization of their product. What was surprising wasn't that the product managers



felt the need to defend Office, but that any Microsoft employee would challenge a columnist, which was against company policy. Obviously my words had hit home.

After the heat of the first reviews died down, Microsoft began hearing from its Mac customers—in unheard-of numbers—about the problems with Office 4.2. To its credit, the company didn't turn a deaf ear. Instead, Microsoft did what it does best: returned to the drawing board and dispassionately examined its mistakes in the hope of creating a much-improved product.

The Mac Advantage

The result, I'm happy to say, looks good for Mac users. For once we seem to be the beneficiaries of Microsoft's dogged efforts to one-up itself in successive software releases. To borrow a phrase from David's feature, Office 98 is still bloatware—but it's bloatware in the best sense: big and beautiful instead of big and ugly.

In reexamining its errors with Office 4.2, Microsoft seems to have come to the conclusion that its biggest mistake was to believe its own marketing spin—that there is little difference between Windows and the Mac OS. The best things about Mac Office 98 are that it takes advantage of the Mac's unique capabilities and it integrates smoothly into the Mac's interface metaphor, instead of actively resisting it as Office 4.2 seemed to.

In effect, Microsoft has acknowledged and even endorsed the Mac's approach to interface design. Office 98 behaves as it's supposed to, and it supports the technologies any Mac software should support. More to the point, even its ubiquitous features, such as the interactive help system, *feel* as if they belong on the Mac.

It'll be interesting to see how Mac-like the next version of Office for Windows is, considering how Mac-like Office 98 for Windows is. That's right: Microsoft has already integrated what it learned from the Office 4.2 debacle into its Windows software.

No doubt Windows users will continue to reap the benefits of the Mac's advantages in their office-automation software. Too bad most of them will never know whom they have to thank. **m**

You know whom to thank if you liked this column, and whom to blame if you didn't. And you know where you can go to express your opinion: visionthing@macworld.com.



For people with 19-inch eyeballs and a 17-inch work space.

Introducing our latest big idea.

The G790 is the latest innovation from ViewSonic®, a company known for taking the lead. It's one of those rare "best-of-all-possible-worlds" solutions for those who need a larger display area but don't want to compromise either screen performance or desktop space. It's the first 19" display (18.0" viewable) made by ViewSonic, and while its screen size is big, its footprint is small, taking up about the same space as a typical 17" (various viewables) monitor.

No small-fry when it comes to performance.

For graphics users, web pros, business types and home surfers alike, the G790 is a big performer. It has a super fine 0.26mm true dot pitch and flicker-free optimal resolution of 1,280 x 1,024 at an 88Hz refresh. In other words, it's razor sharp. And with a vertical scan rate of 180Hz, it even displays flawless 3D applications. Check out the G790 for yourself. It's a real eye-opener.

For the dealer nearest you, call ViewSonic at (800) 888-8583 and ask for agent 81122, or visit our website at: www.viewsonic.com.

Circle 59 on reader service card

ViewSonic G790

- 19" Display (18.0" Viewable)
- .26mm true dot pitch
- 1,280 x 1,024 optimal resolution at 88Hz
- TCO Compliance
- SuperContrast™ screen



ViewSonic®
See The Difference!™

**CREATE ALL YOU WANT.
YOU'VE GOT THE CAPACITY.**

*Each 100MB Zip disk is
equal to 70 floppies.*



The "Condor." The world's largest cargo plane.



You need big cargo space on your computer these days. Certainly more than hard drives or little floppies can offer. Today's multimedia software just fills them up too fast. But a Zip Built-In™ drive gives you unlimited space. And the 100MB Zip disk can handle whatever big nasty file you throw at it. So if you're computer shopping, look for the Zip Built-In logo. It says you've got the capacity to create more, share more, save more, do more. www.iomega.com

ZIP DRIVE. THE CAPACITY TO DO MORE.™



Introducing Zip Built-In.

A Zip™ drive built into your notebook or desktop PC gives you unlimited capacity to store, back up, and share tons of stuff.



Already have a PC? Get a Zip external.

Get a Zip drive. Or the new ZipPlus™ drive that works with either SCSI or parallel ports, has an amazingly small power supply, and comes with cool multimedia software.

With over 10 million out there,
Zip is the standard in high-
capacity removable storage.

Not only are they built into these leading computers, you'll also find them in homes, schools, businesses, and service bureaus across the country.



BECAUSE IT'S YOUR STUFF.™

News

systems

Mac OS Update Frees Your Hard Drive

NEW FILE SYSTEM,

FASTER LAUNCH TIMES

HIGHLIGHT MAC OS 8.1

by Henry Bortman

Nearly six months after shipping Mac OS 8, Apple Computer (408/996-1010, www.apple.com) is poised to release its first update of the operating system. Largely a bug-fix that adds a few relatively minor features, Mac OS 8.1 also delivers a new disk format, HFS+, that allows most Macintosh users to employ their hard disks more efficiently.

When you format a disk, your computer divides it into *allocation blocks*, the smallest unit of space a file can use to store data (see diagram, page 30). The current Hierarchical File System (HFS)—devised in the early days of the Mac when hard disks typically offered 5MB of storage—is limited to 65,536 allocation blocks.

While this may sound like a lot of little compartments in which to store your data, these compartments can get pretty big when you're formatting one of today's multigigabyte disks. For example, when you



save a file to an HFS-formatted 4GB drive, the minimum file size is 64K—even if the file contains only 10K of data.

Reclaimed Territory With HFS+ (otherwise known as Mac OS Extended Format), you can reclaim that unused space. The new storage format supports more than 4.25 *billion* allocation blocks. The result: allocation-block sizes (and thus

minimum file sizes) shrink to between 0.5K and 4K.

So simply by reformatting your disk volumes with HFS+, you can reclaim significant amounts of space. And the larger your volume size, the more space you're likely to recover. When I reformatted the 1GB disk drive on my PowerBook 1400 with HFS+, the space required to store

my 8,200 files shrank from 770.6MB to 661.5MB.

When you update to Mac OS 8.1, you don't have to reformat your disks with HFS+; this is a separate operation that can be done at a later date. Some users may want to think twice before moving to HFS+, and owners of most Mac clones will not be able to upgrade unless

continues on page 30

Jobs Announces \$45 Million First-Quarter Profit for Apple

SURPRISE ANNOUNCEMENT FROM INTERIM CEO

HIGHLIGHTS MACWORLD EXPO KEYNOTE

by Stephen Beale

A new CEO is nowhere in sight, and Apple's long-rumored network computer (NC) still awaits its debut. But Mac enthusiasts attending the 1998 Macworld Expo in San Francisco got one surprising piece of good news: during the January 6 opening keynote, Apple interim CEO Steve Jobs announced that the company expected to report a \$45 million profit on sales of nearly \$1.6 billion for the first quarter of fiscal 1998. Most analysts had predicted that Apple would report a small loss.

G3 Takes Off

Apple cited two major reasons for the results: continued cost-cutting measures and stronger-than-expected sales of its new G3 systems (see *Reviews*, in this issue).

Apple's new online store and its beefed-up presence in many CompUSA outlets also appear to be bearing fruit (see "Apple Unveils Web Sales Strategy," *News*, February 1998). In December, Apple says, Mac CPUs accounted for 14 percent of system sales in CompUSA outlets that include new Apple areas. This compares with 3 percent in October.

Apple declined to predict if profitability would continue into the second quarter, but during a press conference following the Jobs keynote, Apple sales chief Mitch Mandich described the quarterly tally as a "solid and legitimate profit." Apple's last

quarterly profit—\$25 million in the fourth quarter of 1996—was followed by four straight quarters of steep losses, prompting speculation that the company had used accounting gimmicks to improve its results.

QuickTime Debuts

Apple's announcement that it had turned a quarterly profit brightened what could have been a lackluster keynote session. Earlier, Apple had promised that it would have a new CEO in place by the end of 1997, and observers had speculated that Apple would also unveil its NC. Instead, Apple said that it could not meet its original timetable for selecting a new CEO, and it was clear that any NC announcement was weeks or months away.

However, Apple did unveil Mac OS 8.1, an OS update that includes a new version of the Mac's Hierarchical File System (see "Mac OS Update Frees Your Hard Drive," at left). And Apple officially launched QuickTime 3.0, which

was first announced a year ago. During the Jobs keynote, senior QuickTime architect Peter Hoddie demonstrated new audio- and video-streaming capabilities, as well as new video-compression technology developed by Sorenson Vision. Hoddie also announced that Apple will offer a \$30 Pro version of QuickTime that lets you drag and drop one video clip into another.

John Wookey, vice president of financial applications for Oracle, joined Jobs on



stage to announce that Oracle will offer its full suite of enterprise applications—written in Java—to Macintosh users.

New Products

Macworld Expo provided a launching ground for many other new products, including *Macworld's* Best of Show picks (see "Best Products," on the next page) and the following:

- Ricoh (973/882-2000, www.ricoh-usa.com) and Fuji Photo Film (800/755-3854, www.fujifilm.com) both introduced digital cameras. Ricoh's RDC-4300 features 1,280-by-960-pixel resolution and a 3x rotating zoom lens; you can annotate each picture with an eight-second sound clip. Pricing was not available at

press time. Fuji's \$599 DX-9 features a 3x zoom lens and 640-by-480-pixel resolution.

- Caere (408/395-7000, www.caere.com) launched OmniPage Pro 8, an upgrade to its text-recognition software that features improved accuracy and enhanced multilingual functions.

- Linotype CPS (516/434-2000, www.linocolor.com) introduced the Circon, a \$15,000 triple-lens flatbed scanner that captures transparencies and reflective originals at 42 bits per pixel. Each lens provides a different optical resolution—800 by 2,400, 1,200 by 2,400, and 2,400 by 2,400 dpi.

- Pantone (201/935-5500, www.pantone.com) introduced ColorWeb Pro, a \$70 program that makes it easier to use the 216 Web-safe colors. It lets you choose from among 1,012 Pantone Matching System colors, then finds the closest equivalent from the Web-safe palette.

- Several vendors introduced new graphics plug-ins. Extensis (503/274-2020, www.extensis.com) showed PhotoFrames, a \$130 plug-in that adds frames and borders to Adobe Photoshop images. Chroma Graphics (650/375-1100, www.chromagraphics.com) introduced EdgeWizard, which adds edge effects to Photoshop masks. Vertigo Technology (604/684-2113, www.vertigo3D.com) unveiled 3D PopArt, which converts 2-D Adobe Illustrator graphics into 3-D objects.

- Adobe Systems (408/536-6000, www.adobe.com) launched the Adobe Image Library, a line of royalty-free stock images. The first release consists of 30 photography titles for \$300 each, 3 illustration titles for \$230 each, and 6 video titles for \$250 each.

Macworld
BEST of SHOW

Macworld editors pick
the hottest new
products introduced
at Macworld Expo in
San Francisco. See page 26.

IT'S SHOW TIME, AND ONCE AGAIN Macworld's editors have picked the hottest new products to be introduced at Macworld Expo in San Francisco. To be eligible, the product had to be brand-new—announced for the first time at, or shortly before, Macworld Expo. We also had to see the product in action, although software evaluations often were based on beta versions.

FREEHAND 8

Macromedia (415/252-2000, www.macromedia.com) has upgraded its popular illustration program with transparency capabilities and other new features (see "FreeHand 8 Goes Transparent," in this section).

PLUSMAKER

This \$20 utility from Alsoft (281/353-4090, www.alfsoftinc.com) solves what would have been a thorny problem for owners of Mac clones: upgrading to Apple's new HFS+ storage format (see "Moving to Apple's New File System," in this section). Whether you own a clone or an Apple-branded Mac, PlusMaker greatly simplifies the task of upgrading to HFS+.

SURFEXPRESS

The clever folks at Connectix (650/571-5100, www.connectix.com)—the same people who brought you RAM Doubler and Speed Doubler—have performed another sleight of hand by speeding up your Web browser. SurfExpress uses sophisticated caching techniques to boost the performance of Netscape Navigator and Microsoft Internet Explorer—all for just \$35.

DEBABELIZER 3

Equilibrium (415/332-4343, www.equilibrium.com) has added a host of features to its \$595 graphics-conversion program. A revised interface offers interactive image previews, drag-and-drop capabilities, and batch-

automation functions. DeBabelizer scripts can now be made more intelligent with if-then-else statements. And you can convert from RGB to a variety of CMYK formats and vice versa.

MAXPOWR G3 6100 AND 7100/8100

The latest CPU upgrades from Newer Technology (316/943-0222, www.newertech.com) provide a six- to sevenfold performance boost for the Power Mac 6100, 7100, and 8100. Two upgrades are available: one for the 6100, the other for the 7100



and 8100. With a starting price of less than \$600, these are among the most cost-effective CPU upgrades ever released for the Mac. Newer Technology also introduced a PowerPC G3 upgrade for the PowerBook 2400.

TEST STRIP 2.0

This upgrade to the popular Adobe Photoshop plug-in from Vivid Details (805/646-0217, www.vividetails.com) adds several new features. It functions as a Variations feature on steroids, letting you preview a wide range of color modifications on-screen or on a color proof. New features include a repeating nine-up display, 50 special-effects filters, an editable task list, and support for the Photoshop 4.0 Action palette. The Exposure panel now has an Auto White/Black button for expanding the image's tonal range.

systems

New Laptops on Course

DUE IN MAY, WALL STREET AND MAIN STREET WILL SPORT G3 CPU

by David Morgenstern, MacWeek

New PowerBooks will take to the streets this spring as Apple releases a pack of G3-based models. Sources say the machines, which are code-named Wall Street and Main Street, will shift the company's notebook line to new performance levels.

Two entry-level Main Street notebooks and two high-end Wall Street notebooks are due in mid-May. Both models are based on the speedy PowerPC 750 CPU, called G3. In November, Apple released its first 750-based portable, the \$5,699 PowerBook G3.

Wall Street Aimed at mobile creative professionals, the Wall Street models will provide the largest displays yet on an Apple laptop and bring the line into parity with high-end Intel-standard PC notebooks.

Sources say the top-of-the-line Wall Street will feature a 14.1-inch active matrix color display. (The current PowerBook G3 has a 12.1-inch display.) This high-performance model will come with a 292MHz 750 CPU, 64MB of RAM, and a 5GB hard drive. The system will cost about \$6,300.

A \$4,600 Wall Street will reportedly have a 13.3-inch active matrix display. This Wall Street will come with a 250MHz G3 processor, 32MB of RAM, and a 4GB drive.

One source familiar with

Wall Street says the line will introduce a slimmer case design. Instead of the boxy look of the PowerBook 3400c and PowerBook G3, the new enclosure will be more "organic and integrated."

Main Street According to sources, the basic \$2,400 Main Street model will come with a 233MHz G3 processor and a 2GB drive; a \$3,600 version will include a 250MHz CPU and a 3GB drive. Both will ship with 32MB of RAM.

While the 250MHz Main Street will use the familiar 12.1-inch active matrix display, sources say the new entry-level Main Street will use a less costly passive matrix LCD screen.

Both Wall Street and Main Street models will reportedly come with 512K of backside cache running at half the processor speed. Similar to the current Power Mac G3 desktop models, the forthcoming notebooks will feature a 66MHz system bus rather than the 50MHz bus of the PowerBook G3.

In addition, sources say all the notebooks will include a 20x CD-ROM drive, and all but the basic Main Street model will come with a combination Ethernet and 56-Kbps modem card.

Better Batteries The new Mac notebooks will also herald the arrival of second-generation mobile technologies. Sources say the models will be the first to use enhanced lithium-ion batteries that offer 50 percent longer life.

In addition, the new machines will provide speedier wireless throughput via the IrDA port.

The notebooks will also support the CardBus PC Card standard, allowing them to connect to a wider range of peripherals, including FireWire-based devices.

Apple representatives declined to comment.

INTERNET CONFUSION

isp
modem
router
web server
email server \$2,500
firewall \$2,500
router \$1,000
web site creation \$2,000
installation \$3,000
internet server
pc
isp?
hub
pc
email server
pc

-OR-

INTERJET

THE ALL-IN-ONE
INTERNET SOLUTION.



Router • Email Server • Firewall • Web Server •

• Intranet • Web Publishing • Easy Administration

The Internet fog has finally lifted. The InterJet™ from Whistle Communications™ is a revolutionary hardware and software solution created for small offices. Capable of handling speeds of 33.6 through T1, it's everything you need to give email and Internet access to the people who need it. Whether it's 5, 10, 50, even 100 employees. And it starts for as little as \$1,995. Find out why the InterJet keeps racking up awards, including the prestigious PC Computing 1997 Networking Product of the Year.

Call 1-888-4WHISTLE. Or visit www.whistle.com/98e.



www.whistle.com/98e

Call 1-888-4WHISTLE

©1998 Whistle Communications. All rights reserved. Whistle, InterJet, Whistle Communications and the Whistle logo are trademarks of Whistle Communications Corp. All other trademarks and registered trademarks are the property of their respective owners.

Circle 84 on reader service card

Sneak
PEEK

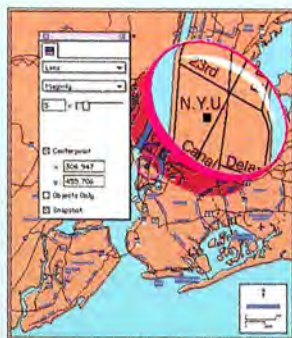
FreeHand 8 Goes Transparent

BY SANDEE COHEN

Hang onto your vectors! Macromedia's (415/252-2000, www.macromedia.com) FreeHand 8 does what was once thought impossible—it provides transparency in an illustration program. Simply place one object over another and apply the new Lens fill to the top object to make it transparent. Not only can you vary the opacity level but you can also set the Lens to produce other effects, including lighten, darken, invert, and magnify.

These are not path-cutting filters but objects whose transparency changes as they're edited. A Snapshot feature lets you turn a lens into an independent object that can serve as a call-out—perfect for technical drawings or maps. And unlike the transparencies in MetaCreations' Expression, which must be output as TIFFs, FreeHand 8's transparent objects can be saved as EPS files, exported to a page-layout program, and brought back into FreeHand for further editing.

No Béziers Required You might expect the rest of FreeHand 8's new features to be minor by comparison, but that's hardly the case. Using the Freeform tool, you can intuitively reshape an object just by pushing and pulling lines—without grabbing a single Bézier handle. The Image Hose is similar to Illustrator's Ink Pen, but instead of drawing a path and then filling it with hatches, you brush in hatches anywhere on the page to get a painterly look.



FreeHand 8's Lens fills can create transparent objects and shadows as well as magnify portions of an image.

Other new tools include Shadow, for creating fuzzy drop shadows of any size, position, or offset; the Emboss path operation, which produces emboss, deboss, chisel, ridge, and quilt effects; and Mirror, which provides kaleidoscopic effects.

Macromedia also lets you customize all keyboard shortcuts and ships with presets for Adobe Illustrator 7, Adobe PageMaker 6, QuarkXPress 3.3, CorelDraw 6, and others. In addition, you can add and remove items in the toolbox and tool bars, keeping only those tools you want in your workspace.

Macromedia made Web animation a priority with Animation Powerpack, which converts FreeHand files into Flash 2 animations. Now that function has been built into FreeHand 8, and the resulting animations are even more compact. The one drawback is Flash's inability to recognize FreeHand 8's transparent objects.

online

Out of the
In-box, into
the TrashKEEPING JUNK E-MAIL
UNDER CONTROL

by Geoff Duncan

It's become a ritual: You dial your Internet service provider (ISP), download your e-mail, and then—muttering under your breath—delete the usual array of unwanted sales messages. While you won't find any surefire way to stop all junk e-mail, you can keep some of it from reaching you by devising your own filters or using the filtering capabilities of programs such as Qualcomm's Eudora or Claris EMailer.

If you use e-mail only to communicate with specific people, you can set up filters that accept mail only from them, rejecting everything else. This works if you expect mail only from family, friends, established mailing lists, and your ISP. But it's not practical if you often get legitimate e-mail from others.

Junk e-mailers usually suppress the recipient lists on their messages, so you can set up a filter that looks for your e-mail address on the To or CC (carbon copy) line of each message you receive. If the filter doesn't find your address, it deletes the message or labels it as possible junk e-mail. Unfortunately, this technique won't work if you're routinely sent blind carbon copies of legitimate e-mail, because your address won't appear in the To or CC line; similarly, if you subscribe to mailing lists,

you'll want to screen out those messages separately *before* applying this filter, since most mailing lists also suppress their recipient lists.

Another option, though time-consuming, is to filter for known junk e-mailers. You can find tools that automatically generate these filters (see www.public.usit.net/nwcs/Spam/Spam.html and www.fogcity.com/em_utilities2.0.html), but junk e-mailers are often several steps ahead since they typically forge e-mail addresses, use bogus accounts, and route their messages through unsuspecting third parties.

If you do set up spam filters, stash all suspect messages in a separate mailbox or mark them with a unique tag or color rather than delete them



outright. Otherwise, you'll never know if your filters deleted legitimate e-mail.

Most ISPs make some effort to reject junk e-mail before it reaches you, and some even offer filtering capabilities. America Online provides a simple form of filtering at keyword Mail Controls.

None of these techniques truly solves the problem; they just reduce the clutter until a better solution comes along. In the meantime, to avoid landing on junk-e-mail lists, never use list-removal features described in the message: they typically just confirm that your address is a prime target. Similarly, avoid posting to large public mailing lists and Usenet newsgroups and consider removing your e-mail address from Web pages.



Don't Be Fooled By Imitations!

Insist on XANTÉ Products For Genuine Adobe® PostScript® 3™!

Don't settle for an imitation. Get the real thing!

XANTÉ® customers demand the best. That is why XANTÉ guarantees true Adobe PostScript on all of our products. And we don't stop there.

With XANTÉ's line of high resolution laser printers, computer-to-film, and computer-to-plate devices, you'll receive the most technologically advanced features available on the market today:

- Up To 1200 x 1200 DPI Resolution
- Oversized 11" x 17" Printing Up To 12" x 25"
- Negative Enhanced Imaging Technology (NEIT) For Quality Negative Film
- Accurate Calibration Technology (X-ACT™) For Precise Dimensional Accuracy
- Densitometer Support
- Halftone Calibration Technology and much more!

Accept No Substitute! - Call XANTÉ today...

800-926-8839 Ext. 2146

Dealers Call Ext. 2147

www.xante.com



© 1997 XANTÉ CORPORATION. XANTÉ, Accel-a-Writer, and X-ACT are trademarks or registered trademarks of XANTÉ CORPORATION. Adobe, PostScript, PostScript 3, and the PostScript logo are trademarks of Adobe Systems Incorporated. Other brands and product names are trademarks or registered trademarks of their respective holders. XANTÉ CORPORATION, 4621 Spring Hill Ave., Mobile, AL 36608, P.O. Box 16526, Mobile, AL 36616-0526, Phone: (334) 342-4840, Fax: (334) 342-3345.



Adobe® PostScript® 3™



XANTÉ

Innovations in Printing Technology

Circle 112 on reader service card

"MAC OS UPDATE FREES YOUR HARD DRIVE"

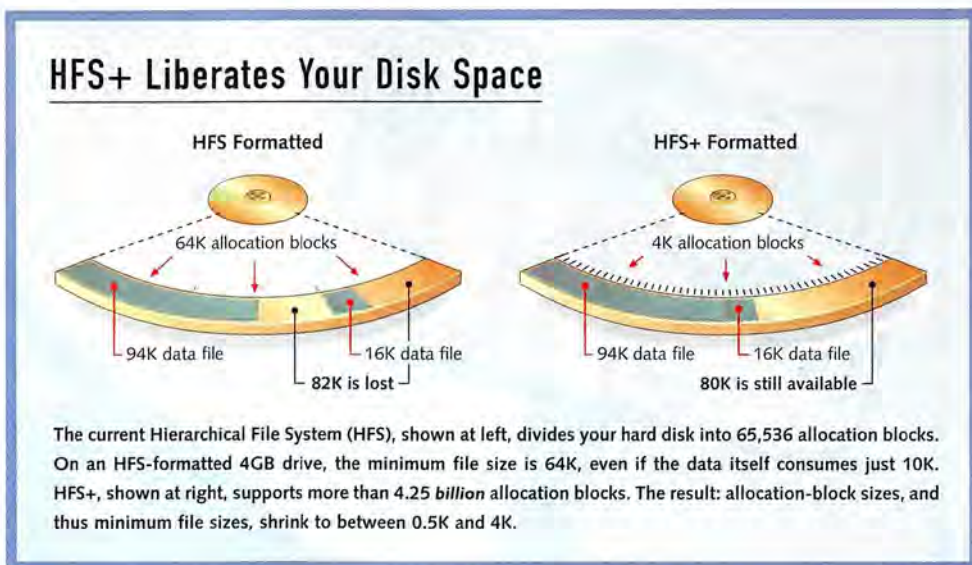
continued from page 24

they have a pair of external hard drives—or PlusMaker, a handy \$20 utility from Alsoft (see the sidebar, "Moving to Apple's New File System").

Other Features In addition to the revised file system, Mac OS 8.1 adds several other new features.

- It is Apple's first release to make Microsoft Internet Explorer the default Web browser. (Department of Justice, please take note.) If you are already using Netscape Navigator, it will remain your default browser.

- It delivers Apple's Mac OS Runtime for Java (MRJ) 2.0, which fully implements Sun Microsystems' standard Java specification. MRJ 2.0 includes the Just-in-time Java compiler for PowerPC- and 680X0-based Macs, which improves Java-applet performance over the Web. Internet Explorer fully supports MRJ 2.0, but Navigator uses its own



version of Java and cannot take advantage of the new software.

- It includes version 1.3 of Apple's Open Transport networking architecture, which supports multiple IP addresses on a single computer and improves the speed of copying files over a network.

- By modifying virtual memory, Apple has been able to cut by as much as 50 percent the time needed to launch a

number of popular applications. Some programs benefit most the first time you launch them. Others show more improvement when you quit and then relaunch them.

Macworld Lab confirmed that key applications—including Adobe Photoshop 4.0.1; Claris FileMaker 3.0; and Microsoft Word 6.0.1, Excel 5.0, and Internet Explorer 3.01—launch faster under Mac

OS 8.1 than under OS 8.0.

- Mac OS 8.1 includes new versions of key software components. Version 8.5.1 of the LaserWriter driver lets you work with non-Apple-Talk printers that support TCP/IP. PC Exchange 2.2 is aware of Windows 95's long file names (it truncates them to 31 characters) and does a better job of handling Iomega Zip and Jaz cartridges.

Apple also fixed several bugs, including a flashing question mark that sometimes appears at start-up on the Performa 6400 and on Power Mac 5400, 5500, and 6500 models.

Mac OS 8.1 should be shipping by the time you read this. An 8.0-to-8.1 updater, which takes up 12MB to 15MB of disk space, will be available free online. Apple will also ship a full Mac OS 8.1 installer on CD-ROM for \$20 with proof of 8.0 purchase.

Anyone running Mac OS 8.0 will likely benefit from the 8.1 upgrade, though you may need to upgrade some of your favorite utilities. My recommendation: back up your 8.0 system, install the upgrade, and see how it goes. If you have problems, you can always go back to 8.0. Once you're comfortable with 8.1, you can consider installing HFS+.

Moving to Apple's New File System

SHOULD YOU REFORMAT YOUR disk drives with HFS+? That depends on how adventurous you are—and, especially if you're a clone user, on how many extra disk drives you have lying around.

Read Me+ Unless you're running Mac OS 8.1 or later, you won't be able to read data on HFS+-formatted volumes; all you'll see is a Read Me file. Therefore, if you routinely bring your removable cartridges to a service bureau, you may want to think twice before formatting them with HFS+ unless the service bureau is also running Mac OS 8.1.

If you want to reformat your Mac's internal disk with HFS+, you'll need an external drive with

enough capacity to back up your data. Then you'll need to reboot from a Mac OS 8.1 full-install CD—or a hard disk that has Mac OS 8.1 installed as the boot system—because you must be running 8.1 to format a disk with HFS+. Apple is charging \$20 for the CD.

Clone Woes If your Mac doesn't have an Apple CD-ROM drive—and most Mac clones don't—you've got a bigger problem. Because the Mac OS 8.1 CD doesn't include drivers for non-Apple CD-ROM drives, you won't be able to boot your Mac clone from the CD. Instead, you'll need two external hard drives to convert to HFS+: one to back up your data, and another

on which to install Mac OS 8.1 and then reboot.

Alsoft (281/353-4090, www.alfsoftinc.com) has provided a handy solution to the HFS+-upgrade conundrum in the form of PlusMaker, a \$20 utility that simplifies the process of upgrading to the new file system. PlusMaker automatically converts HFS-formatted disks to HFS+ in a simple one-step operation; it also retains aliases and performs minor directory repairs. In theory, PlusMaker lets you move to HFS+ without backing up your media. However, you should still back up your data even when using PlusMaker to make the HFS+ conversion.—HENRY BORTMAN

Which CAD software
outgunned all others
in
head-to-head competition?

You may be surprised...



MiniCAD 7: Winner of the 2nd as “BEST OVERALL ARCHITECTURAL CADD SOFTWARE”

The CADD Shootout Challenge:

The annual 3D Designers CADD Shootout competition called together design teams representing 12 of the world's top CAD softwares for a head-to-head competition judged in 22 categories. The winner, as judged by a panel of 12 real-life architects, CAD professionals and industry experts along with more than 400 architects and professionals in attendance, walked away with the title of “Best Overall Architectural CADD Software” and the prestigious CAD Cup Trophy.

Each 3-member design team was challenged to flex their CAD software muscle by producing a full design project complete with elevations, perspectives and QuickTime animations, in only three hours.

The Case:

The goal – to produce a New England-style church, built on a slope facing the sea – was not revealed until the start of the shootout. And, to add realism to the event, aspects of the design criteria were changed every 30 minutes for the first 1.5 hours of the competition!

The Champion:

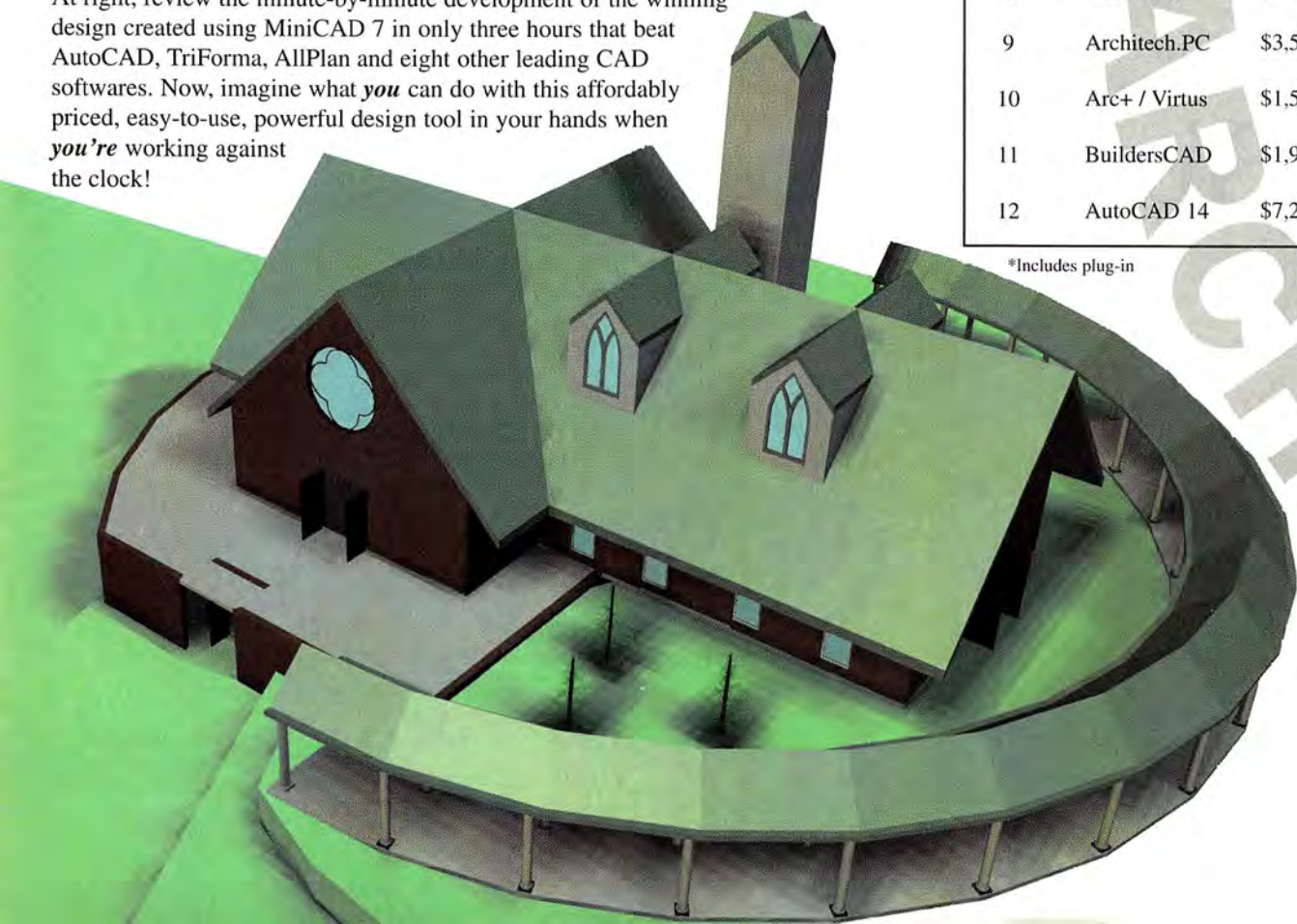
MiniCAD 7 outperformed them all—winning the event as “the Best Overall Architectural CADD Software”, and placing in 18 of the 22 categories, including first place in six categories!

At right, review the minute-by-minute development of the winning design created using MiniCAD 7 in only three hours that beat AutoCAD, TriForma, AllPlan and eight other leading CAD softwares. Now, imagine what *you* can do with this affordably priced, easy-to-use, powerful design tool in your hands when *you're* working against the clock!

Overall Competitor Standings

Ranking	Program	Retail Price
1	MiniCAD 7	\$ 795
2	AllPlan	\$4,995
3	TriForma	\$5,325
4	ArchiCAD	\$4,995
5	Arriis	\$4,250*
6	DataCAD	\$ 249
7	DenebaCAD	\$ 799
8	Architron	\$4,000
9	Architech.PC	\$3,500
10	Arc+ / Virtus	\$1,595
11	BuildersCAD	\$1,995
12	AutoCAD 14	\$7,250*

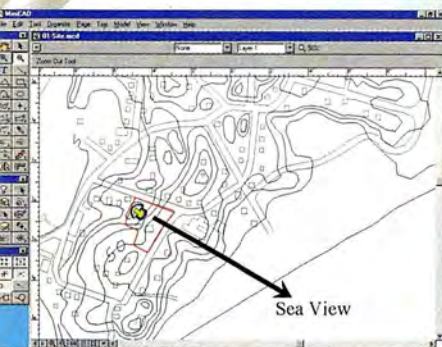
*Includes plug-in



Annual Architectural CAD Cup "BEST ARCHITECTURAL CADD SOFTWARE"

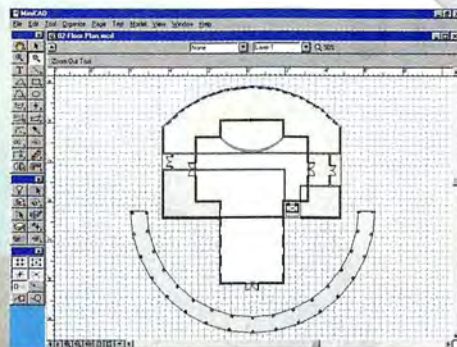
Designers 3D CADD shootout, Build Boston, Nov. 97

What can be accomplished in 3 hours using MiniCAD 7 ...even when the client makes changes every half hour?



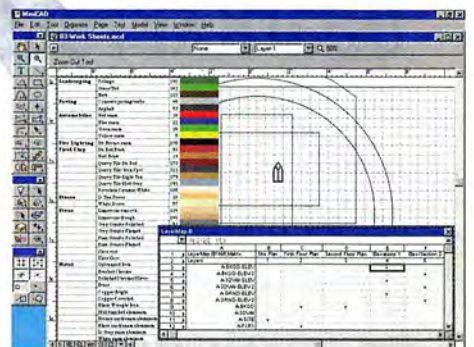
0:03:01

MiniCAD 7 quickly and easily imports the existing site plan as defined by contest sponsors, using it as an accurate basis for site delineation. This illustrates MiniCAD 7's ability to use and augment data files from other CAD softwares - on Windows or Macintosh.



0:45:05

MiniCAD's powerful hybrid design environment allowed the MiniCAD team to develop in 2D and 3D simultaneously. Here you see the exterior walls of the project developed in just under an hour.



1:10:22

As the real nuts and bolts of the design are worked out, MiniCAD 7 keeps highly detailed worksheets and material takeoff lists.



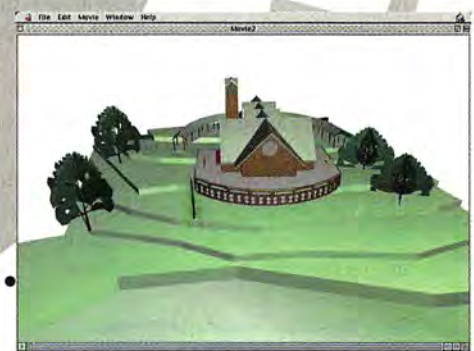
2:03:30

The MiniCAD team used MiniCAD's unique 'Layer Linking' capability to easily create this elevation and to instantly view in 3D any changes made to the plan.



2:03:00

Fully-rendered interior design generated in MiniCAD 7 with the Lightworks 3D plug-in. This feature greatly enhanced the design presentation by allowing for a variety of real-life visual effects such as multiple light sources, lighting effects and shadows.



2:55:30

Final output, a QuickTime movie created with MiniCAD 7's built-in QuickTime animation feature depicts the beauty and architectural majesty of the MiniCAD 7 design. The judges panel was impressed too, voting MiniCAD 7 "Best Overall Architectural CADD Software", ahead of competing softwares costing thousands more.

Diehl Graphsoft Inc
Software for Today's Professional

10270 Old Columbia Road Columbia, MD 21046
Sales: (888) MiniCAD Fax: (410) 290-8050
www.diehlgraphsoft.com

Circle 46 on reader service card

Windows®
Macintosh®

Reviews

QuarkXPress 4.0

LONG-AWAITED UPGRADE

TAKES PROGRAM

IN NEW DIRECTIONS

FOR NEARLY TWO YEARS, QUARKXPress users have been waiting for version 4.0. Quark was in no hurry to release the new version, deciding instead that the main competitor was no real threat and that it was more important to create new products in new areas. The company's attempt to diversify its portfolio didn't pan out—only the QuarkImmedia authoring tool ever shipped—but Quark was correct that the several PageMaker updates (first from Aldus and then from Adobe Systems) did not threaten QuarkXPress, whose sales continued to grow despite its age.

Four years after version 3.3's debut, QuarkXPress 4 gives the venerable page-layout program several major new features—including graphics creation and long-document publishing, both of which help reach new audiences—while improving its superior layout capabilities.

Day-to-Day Improvements

In many respects, designers using QuarkXPress won't notice a lot of changes that affect their daily work. QuarkXPress's layout tools have long been superior to PageMaker's, and frankly there's not a lot to be added. But don't let first impressions fool you: version 4 has worthwhile enhancements for everyday use.

The best of these is the addition of



character styles, which let you apply a series of text formats to selected text, much as traditional paragraph styles let you apply formatting to whole paragraphs. A thoughtfully revised Append dialog box lets you move color definitions, H&J sets, style sheets, printer styles, and custom line patterns from one document to another. Not only can you move more elements among documents but you can also now choose specifically *which* elements.

New to version 4 is the ability to create line styles—patterns of dots, dashes, and stripes—for both box frames and

rules. Because these are vector patterns, they reproduce nicely at any size, unlike the block patterns created by the hoary Frame Editor utility.

Other significant enhancements to common layout functions include the integration of the QuarkPrint utility—which provides printer styles that save settings for specific printers and allows the printing of noncontiguous page ranges—into the product, and a plug-in manager that lets you group plug-ins into Conflict Catcher-like sets. You also gain greater control over file options when saving a

REAL PRODUCTS
REAL RATINGS

Reviews you can trust: Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.

OUTSTANDING: ★★★★★

VERY GOOD: ★★★★

GOOD: ★★★

FLAWED: ★★

UNACCEPTABLE: ★

page as an EPS file (although you still can't save just a selected part of a page); the ability to have text run around all sides of a graphic contained within a text box (rather than just to one side); and broader color features, including Hexachrome support and the ability to mix colors from several color models. The use of tabbed panes keeps all features manageably arranged in dialog boxes, helping keep menu clutter down.

Version 4 offers no significant changes to QuarkXPress's typographic controls. The small but annoying omissions of the past continue: there is still no special shortcut for an em space, the program still doesn't convert two consecutive hyphens into an em dash as you type, and there's no fraction builder.

More annoying, the program still lacks a table editor, which forces you to experiment with tab stops to build complex tables. QuarkXPress now supports thousands of tabs in a paragraph rather than just 20, but it still takes too much work. Quark says it is working on a free plug-in to create tables; Tableworks (425/392-7745, www.tableworks.com) sells the \$249 Entable program, which bridges this significant gap.

Several New Twists

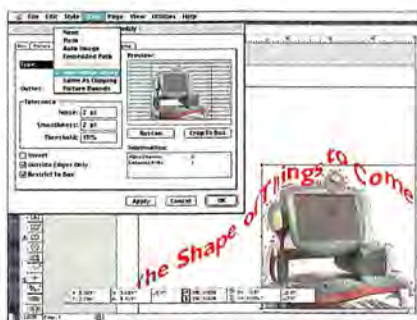
QuarkXPress 4 offers not only Bézier box tools to contain both text and graphics but also Bézier lines and Bézier text paths. And QuarkXPress lets you control how letters follow the text path, including an option that warps the characters into a near-3-D perspective based on the curve's shape.

There's pretty much no shape you can't draw in QuarkXPress. And new tools let you merge shapes to create new ones, with options for union, intersection, difference, exclusive or, and join that let you do more than merely group shapes (see *Publishing Workshop*, January 1998). Combine those boxes and curves with QuarkXPress's colors, frames, and blends, and you can draw a huge array of shapes. You'll still need Macromedia FreeHand or Adobe Illustrator for complex pieces, but in many cases you'll never have to leave QuarkXPress.

The use of Bézier boxes goes beyond drawing. QuarkXPress now imports clipping paths from EPS files and alpha channels from TIFF files and lets you use them as text-wrap boundaries. You can even have the text wrap follow the path

or channel outside the box that contains the picture, and you can edit the path or channel as if it were a Bézier shape created within QuarkXPress. You can also convert text into boxes, into which graphics or a line of text can be imported.

QuarkXPress's other major new thrust is long-document production—one of the few areas in which PageMaker historically has surpassed it. The new version includes several tools that let you create lists (such as tables of contents) and indexes. A new Books feature lets you



Curves Ahead Among QuarkXPress's new features are Bézier text paths and Bézier text wraps.

manage styles and page numbers across several documents, useful for multichapter publications. One document contains the master settings applied to all the other documents in the book.

Alas, you can't import index entries from word-processor documents, and there is no mail-merge-like capability for using conditional text. Adobe FrameMaker and the Windows-based Corel Ventura Publisher remain the leaders in long-document tools; QuarkXPress merely achieves parity with PageMaker with these additions.

Unnecessary Blemishes

QuarkXPress does have some shortcomings. Its file-import capability is more limited than PageMaker's and more limited than appropriate. QuarkXPress does not support HTML files, Microsoft Excel spreadsheets, native Adobe Photoshop images, CorelDraw graphics, or QuickTime movies. Nor does it support the newest Microsoft Word or Corel WordPerfect formats. QuarkXPress's Windows version doesn't import several Mac formats that its Mac counterpart does; likewise, the Mac version doesn't import several PC formats that the Windows version does.

QuarkXPress's installation method requires both a floppy disk and a CD; try

installing QuarkXPress on a PowerBook—you'll need an external CD-ROM drive so you can also use your floppy drive. Quark says that it requires both disks to cut down on illegal copying, but it could have provided the same antipiracy controls by letting customers install off the CD and then insert the floppy disks when first launching the program.

Quark released the Mac and Windows versions of QuarkXPress 4.0 simultaneously, and the two read each other's files with no hassle. Because Windows does not support ligatures, neither does Windows QuarkXPress; the program simply converts them to standard characters and alerts you. I found no performance edge or interface advantage on either platform.

Macworld's Buying Advice

QuarkXPress 4.0 is a no-brainer upgrade for current users; upgrades cost \$300 if you own version 3.3. The ability to save documents in version 3.3 format—which removes 4.0-specific features from the document, converting them to the closest equivalent—will ease the transition.

QuarkXPress 4 is a compelling product for PageMaker users looking to switch. (New copies sell in catalogs for close to \$700.) While Adobe has labored to improve PageMaker several times in the last four years, the program has yet to match QuarkXPress's core layout strengths—something Adobe apparently acknowledges as it reportedly moves on to create a new PageMaker replacement known as "K2" (see www.macweek.com/mw_1148/nw_adobe.html). With this upgrade, there is nothing major that PageMaker does significantly better than QuarkXPress, and there are many places where QuarkXPress surpasses PageMaker. Although PageMaker offers some interface advantages, they don't justify the shortcomings in its capabilities. QuarkXPress isn't perfect, but it's more capable than the competition.—GALEN GRUMAN

RATING: ★★★★★ **PROS:** Well-designed graphics-creation tools; serviceable long-document features; improved interface; layout-oriented enhancements. **CONS:** No table editor; typographic niceties missing; inadequate file import. **COMPANY:** Quark (307/772-7100, www.quark.com). **LIST PRICE:** \$995 (\$1,895 for Passport version, which supports 11 European languages).

DOS-Emulation Software

PENTIUM EMULATION DOESN'T MEAN PENTIUM SPEED

ARE THERE REALLY PEOPLE OUT there longing to play DOS games on their Macs? Evidently there are; both Connectix and Insignia Solutions say they released their new DOS-emulation packages—Virtual PC DOS and RealPC, respectively—in direct response to customer demand. Both of these programs provide a robust emulation of a real Pentium-based PC running a full version of MS-DOS, but as

RealPC, however, isn't simply SoftWindows 95 minus Windows 95. Insignia Solutions has beefed up RealPC's emulation engine to include support for SoundBlaster Pro and SoundBlaster 16 compatibility and MMX, making RealPC much more suitable for playing PC games—provided that they run under DOS 6.22, which comes preinstalled. RealPC comes with a CD-ROM containing 20 DOS-based action games, most of which are demo versions or shareware.

Insignia boasts that RealPC runs games "shockingly fast." Connectix more modestly promises "playable performance." Both claims are only half true. RealPC does run programs faster than you might expect from software emulation but still considerably slower than any PC you've used in the last five years. Likewise, VPC's emulation delivers surprisingly brisk performance with some games—in many cases running them faster than RealPC—but it's still nowhere near what you'd get from hardware. Many games are indeed "playable," but both products' speeds are far from the screaming-fast performance demanded by serious gamers.

In Macworld Lab's speed tests, RealPC scrolled through a WordPerfect 5.1 document almost twice as fast as VPC, finishing the task in 25 seconds, compared to VPC's time, 53 seconds. But VPC did better in the game-based tests, which corroborated my own results when playing a variety of games.

Though VPC offers a more intuitive scheme for sharing folders between the

Mac and PC environments, it lacks RealPC's support for AppleScript. Also, VPC allows only one-way copying—from Mac to PC—while RealPC allows you to copy and paste in either direction. RealPC even allows you to drag and drop selected text from the PC environment right onto the Mac desktop.

Macworld's Buying Advice

We've said it before, and I'll say it again: PC-emulation software is practical for only very light use, such as occasionally accessing information from a PC program. Either of these programs can fill that bill for a great price, though Virtual PC provided better performance in most of our tests. But if action-packed game play is really important to you, think about picking up a used PC instead. Even a first-generation Pentium will give you several times the rush you'll experience with even the best emulation.—JOSEPH SCHORR



Screen in Screen Virtual PC lets you run DOS within a window on the desktop. The button bar along the bottom of the window lets you eject CDs, set up shared folders, and jump into full-screen mode.

with any software-based PC emulation, speed is disappointing.

At the core of Virtual PC DOS is exactly the same engine that drives Connectix's other Virtual PC products: a sturdy, fully implemented emulation of an Intel Pentium with MMX. In addition to MS-DOS 7.0, the program also comes with special versions of three well-known DOS sports games—Madden NFL Football, PGA Tour 96, and Need for Speed.

RealPC 1.0

RATING: ★★★ **PROS:** Bidirectional copy and paste between Mac and PC; good drag-and-drop support; AppleScript support. **CONS:** Much slower than an actual PC; slower performance than Virtual PC in some games. **COMPANY:** Insignia Solutions (408/327-6000, www.insignia.com). **LIST PRICE:** \$79.

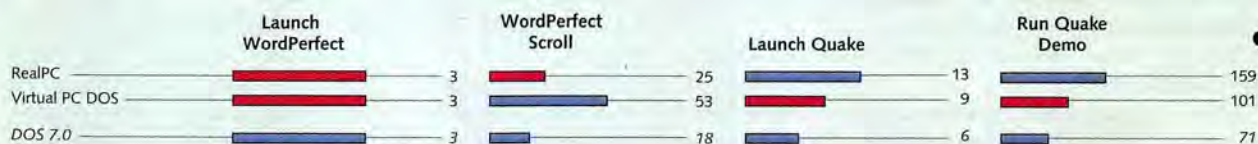
Virtual PC DOS

RATING: ★★★½ **PROS:** Intuitive folder-sharing setup; faster than RealPC in some games. **CONS:** Much slower than an actual PC; can't copy PC text to Mac environment. **COMPANY:** Connectix (415/571-5100, www.connectix.com). **LIST PRICE:** \$69.



DOS Emulators: Slower Than an Old Pentium PC

Best result in test. Times are in seconds. Shorter bars are better.



Behind Our Tests

The emulators were tested on a 200MHz Power Mac; DOS was tested on a 90MHz Pentium PC. For detailed information on our methodology, see www.macworld.com/tests/. —Macworld Lab testing supervised by Susan Silvius

PowerPC 750 Systems

APPLE GOES AFTER DELL, BUT UMAX STEALS THE SHOW

STEVE JOBS WOULD LIKE NOTHING more than for Dell Computer to replace Microsoft as the company Mac aficionados love to hate. Jobs has touted the new Power Mac G3 systems, which use the new PowerPC 750 CPU, as Apple's answer to Dell's successful model of fast, cheap PCs.

Apple's new systems are fast, and they are cheaper than previous Apple systems... but Dell shouldn't lose any sleep.



SUZANNE ROADY

Power Mac G3 tower and desktop; SuperMac S900Base with Maxpower

A 266MHz Apple Power Mac G3 tower with 64MB of RAM, a 4GB hard drive, a 4MB video card, a 56-Kbps modem, and a 24x CD-ROM drive costs \$3,049; a 300MHz Pentium II-based Dell system costs \$2,267 (\$2,609 if you want a SCSI system), including a Microsoft Office 97 bundle, which Apple doesn't offer. You can now custom-configure your Mac through Apple's online store, but beware: Apple charges a premium for peripherals such as monitors, modems, and Zip drives. (Apple's Trinitron monitor, for example, costs twice

that of Dell's, and both are made by Sony.)

Apple's systems look like the 7300 and 8600 models they replace, and at first glance they're the same as those old models except for the faster CPU. But Apple did make other changes to its architecture that cut both costs and quality. For example, Apple cut the G3's RAM slots from eight to three and replaced the internal SCSI-2 Fast chain with two IDE connectors, limiting you to 6 SCSI devices total, versus 12 on previous Macs. Apple is also using the slower Mesh SCSI chip.

Apple's newest systems are a clear response to the clone systems from Power Computing and Motorola Computer Group that died when Apple killed most of the clone industry. Apple's systems are cheaper than those clones, but they're also slower and less expandable. Had the clone makers not been blocked, Apple's systems would seem far less compelling.

Although Apple intends to maintain its more expandable, PowerPC 604e-based Power Mac 9600 line, it offers no PowerPC 750-based systems designed for high-end content creators. The G3 line has too few RAM slots, insufficient SCSI support, and too few PCI slots (a mere three). If you want speed *and* expansion, you aren't going to get it from Apple.

But you *will* get it from Umax Computer, whose new SuperMac S900Base with Maxpower Pro+ 250 bundle takes a very expandable tower system and adds a PowerPC 750-based CPU card. (Because of Apple's licensing constraints, Umax is obligated to ship the systems with a

150MHz 604e CPU card and offer a coupon for the easily installable 250MHz PowerPC 750 card.)

The price isn't low—\$4,090—but for \$1,000 more than Apple's comparable G3 configuration, you gain eight RAM slots, six PCI slots, a second CPU slot, a second SCSI chain, an easier-to-open case, and Connectix's Speed Doubler 2 software but lose a modem. Even though the upgrade card is slower than Apple's CPU, it matches its performance, thanks to its 1MB backside cache.

Macworld's Buying Advice

Jobs's posturing notwithstanding, Apple hasn't yet learned to play Dell's game at Dell's level. Although the price is a bit high, the Umax system is the clear choice for image editors, digital-video creators, animators, and others seeking a Mac that can hold its own.—GALEN GRUMAN

Power Macintosh G3 tower ★★★

Power Macintosh G3 desktop ★★★½

PROS: Speedy; custom-configurable. **CONS:** Limited RAM, drive, and PCI-slot expansion; overpriced peripherals. **COMPANY:** Apple Computer (408/996-1010, www.apple.com). **DIRECT PRICE:** \$3,049 (266MHz tower; \$450 less for desktop case and \$250 less for 233MHz CPU).

SuperMac S900Base, Maxpower Pro+ 250

RATING: ★★★★★ **PROS:** Excellent performance; highly expandable. **CONS:** A bit pricey. **COMPANY:** Umax Computer (510/226-6886, www.supermac.com). **COMPANY'S ESTIMATED PRICE:** \$4,090.



G3 Systems Set New Speed Standard

Best overall performance. Longer bars are better. Bold indicates best result in a specific test. ▶ New system. An Apple Power Macintosh 7100/80 has a SpeedMark score of 1.0.

SpeedMark

- ▶ Apple Power Macintosh G3/266 tower
- ▶ Apple Power Macintosh G3/266 desktop
- ▶ Umax SuperMac S900Base with Maxpower Pro+ 250
- ▶ Apple Power Macintosh G3/233 desktop
- Apple Power Macintosh 9600/300
- Apple Power Macintosh 7300/200



CPU	FPU	Disk	Video
5.0	4.7	2.9	7.1
5.0	4.6	2.7	7.1
4.9	4.5	2.7	9.3
4.5	4.1	2.5	6.7
4.3	4.3	2.5	7.4
2.9	2.9	1.6	3.6

Behind Our Tests

For detailed information on our systems benchmarks, see www.macworld.com/tests/.—Macworld Lab testing supervised by Jeffy Milstead

ScanJet 6100C

HP SCANNER HAS MUCH TO BE MODEST ABOUT

HEWLETT-PACKARD'S 600-DPI, 30-bit color HP ScanJet 6100C strongly resembles the HP ScanJet 4c it replaces. As with its predecessor, the ScanJet 6100C's street price (\$799) places it squarely between the current crop of low-end, sub-\$400 flatbed scanners and their professional-quality cousins in the \$1,400-to-\$1,800 range. Also like the ScanJet 4c, HP's new scanner includes Adobe Photoshop LE rather than the full edition of Photoshop. It's the inheritance of its fore-



ARNOLD TOBERO

runner's limitations in scan quality and the aging DeskScan II plug-in, though, that keep the ScanJet 6100C from being a suitable budget substitute for the professional units.

The ScanJet 6100C captures color that's more eye-grabbing than it is accurate. The tones in our 6100C test scans were rich and vibrant, but also oversaturated—we saw slight posterization in blue and yellow areas, and marked inaccuracy in the greens. Although these colors aren't

ideal for print publication, they're more appealing than the duller, muted tones typical of low-end scanners, making the ScanJet 6100C a fine choice for snappy Web graphics. The ScanJet 6100C's sharpness proved adequate, but fine textures were blurred in our test image. The scanner also has some difficulty resolving shadow detail.

Scanning speed is one area where the ScanJet 6100C excels (see the benchmark, "Newest ScanJet Boasts Excellent Speed"). Its final scan speeds are among the fastest of the 24-bit and 30-bit scanners we recently compared ("Scan It," November 1997) and outpace the 36-bit scanners in our last roundup ("Scanners That Get the Details," December 1997).

HP's DeskScan II plug-in is functional, but it doesn't go much beyond a minimal set of the most essential features. Its interface is also sorely in need of an update—and not just because it looks like a holdover from the days of System 6. For example, DeskScan II makes you select scan types and output devices from pop-up menus, and you have to modify scan parameters—color depth, image resolution, and so on—in an edit mode.

The ScanJet 6100C comes with a neat little gizmo: a small 35mm slide adapter.

Essentially, this is just a triangular box, open on one side and lined with mirrors on the other two sides for reflecting light from the scanner back down through a slide. Although this simple device is no match for a proper transparency adapter—which HP sells for \$699—it's adequate for scanning placeholders and other rough images.



Not Ready for the Pro League Compared with our reference drum scan (left), in the ScanJet 6100C's scan the fabric is too smooth and the wrong shade of green. Note the posterized lemon and lack of shadow detail around the rosemary.

Macworld's Buying Advice

If you're hoping to find a professional-quality scanner at a fire-sale price, you won't find it here. But if you're searching for a product that's a step up from an entry-level scanner, it's worth looking at the ScanJet 6100C.—PETER M. STOLLER

RATING: ★★★ **PROS:** Moderately priced; captures rich, vibrant colors; handy 35mm slide adapter. **CONS:** Lacks sharpness and color accuracy; scanning software needs interface update. **COMPANY:** Hewlett-Packard (415/857-1501, www.hp.com/go/scanjet). **LIST PRICE:** \$921.



Newest ScanJet Boasts Excellent Speed

■ Best result in test. Shorter bars are better. Times are in seconds. ▶ New product. Discontinued product shown in italics for comparison.

	Gray-Scale Preview	Gray-Scale Scan	Color Preview	Color Scan
Epson Expression 636 Professional	6.6	21.9	6.6	64.4
▶ Hewlett-Packard ScanJet 6100C	13.6	19.2	13.9	54.1
Agfa SnapScan	7.3	32.6	11.4	82.4
Umax Astra 600S	21.1	18.7	29.8	69.7
Microtek ScanMaker V300	35.9	22.5	36.0	67.6
<i>Hewlett-Packard ScanJet 4c*</i>	17.3	19.0	18.0	77.7

*Tested in March 1996 on a Power Mac 7100/80; all other systems tested on a Power Mac 7500/100.

Behind Our Tests

For detailed information on our methodology, see "Scanners That Get the Details," December 1997, or www.macworld.com/tests/.—Macworld Lab testing supervised by Suzanne Courteau

Out of Your Mind!

Introducing Nexus GA from ATI

From your brain to the big screen and the printed page faster than you can change your mind – ATI's Nexus GA will dramatically improve the graphics capabilities of your Macintosh computer. Specifically designed for graphics professionals and content creators, ATI Nexus GA offers high-performance 2D and 3D graphics in one affordable, easy-to-install board.

Nexus GA offers no-compromise 2D graphic performance with true color in all the modes you demand up to

1920x1080. Work better and faster in all your favorite applications like PhotoShop, and Infini-D, with 8MB of WRAM memory upgradeable to 16MB.

2D Performance – MacBench 4.0

ATI NEXUS GA	316
IXMicro TwinTurbo 128MB	297
Matrox Millennium	254

Larger Numbers are Better

Plus, with Nexus GA's 3D functionality and QuickDraw 3D™ support you can add 3D elements to any of your design and multimedia projects. Nexus GA will take your content creation to new heights with a full suite of 3D tools and workstation-class performance.

And because Nexus GA is from ATI, makers of award-winning graphics accelerators for Macintosh computers, you can rest easy that Nexus GA will work seamlessly with your applications. Nexus GA – fastest, high resolution true color performance – to choose anything else you'd have to be out of your mind.

© Copyright ATI Technologies Inc. 1997. ATI, 3D RAGE PRO, and NEXUS are trademarks, or registered trademarks of ATI Technologies Inc. All other company and/or product names are trademarks and/or registered trademarks of their respective manufacturers. *MacBench 4.0 Hi Res Publishing Mixes Tested on a PowerMac 9600/200 32MB. All Boards had 8MB. Test Mode: 1280x1024x25 Hz @32bpp. Tested using Driver Versions: ATI RAGE PRO 3.0 / IXMicro TwinTurbo 4.0.2 / Matrox Millennium 2.10. Features and specifications are subject to change without notice.



MICRO CENTER

Mac & Windows

1-800-251-6321

Circle 256 on reader service card

Now You See It.™
www.atitech.com/macwo



Network Laser Printers

HP'S OFFERING IS FASTER, CHEAPER THAN APPLE'S

TWO NEW OFFERINGS FROM printing stalwarts Apple and Hewlett-Packard question many traditionally held notions of standard network printer features, with mixed results. Apple's LaserWriter 8500 and HP's LaserJet 4000 TN are both fast, network-ready workgroup printers with the usual suit-and-tie-pleasing extras like duplexing units for double-sided printing, high-volume

Focus on Content Creation

Considering Apple's much-touted refocusing on its core graphics users, it's not too surprising that the LaserWriter 8500 boasts full-bleed capabilities on 11-by-17-inch paper and prints on a much wider variety of paper sizes than the LaserJet 4000 TN can. Its paper-handling capacity ranges from just under 4 by 6 inches up to a whopping 13 by 20 inches; the LaserJet's maximum paper size is 8.5 by 14 inches.

What else does the 8500 have to offer that the 4000 TN doesn't? True Adobe PostScript, for one thing. The LaserWriter 8500 is one of the first printers to ship with Adobe's new PostScript Level 3, while the LaserJet 4000 TN, in contrast, relies on emulated PostScript Level 2, following the end of Hewlett-Packard's licensing agreement with Adobe in early 1997.

However, the LaserWriter 8500 does not boast the LaserJet 4000 TN's resolution.

HP cranks its printer's default resolution up to 1,200 dpi, via either interpolation or true optical resolution (although the 4000 TN's rated speed drops to 8.5 ppm in the latter case). The best news is that this increased, interpolated resolution doesn't come at the cost of a printed-page slowdown—the LaserJet surpassed the faster-rated LaserWriter in most Macworld Lab speed tests (see the benchmark, "LaserJet Blasts Past Faster-Rated LaserWriter").

Print quality is as important as speed in an office printer; does the difference

in PostScript implementation make a difference in document quality? Macworld Lab testing showed that the LaserJet 4000 TN had no significant problems rendering any of our test files, although we occasionally saw vertical banding in some graphics prints. The biggest difference between the two printers' implementations of PostScript is in their price: the Level 3-equipped LaserWriter 8500 costs roughly \$900 more than the clone-equipped LaserJet 4000 TN.

Macworld's Buying Advice

If you need a printer that can handle jumbo paper and tackle full-bleed 11-by-17-inch prints, the Apple LaserWriter 8500 is a solid choice. Otherwise, HP's LaserJet 4000 TN prints faster than the LaserWriter, offers higher resolution, and—best of all—costs \$900 less. That more-for-less equation makes the LaserJet 4000 TN a smart choice for an office of any size.—SUZANNE COURTEAU



Apple LaserWriter 8500 (left) and HP LaserJet 4000 TN.

paper trays, and high-capacity toner cartridges. The 20-ppm LaserWriter 8500 comes equipped with 16MB of RAM and a parallel port for cross-platform connectivity; the LaserJet 4000 TN, a 17-ppm unit with 8MB of RAM, ships with HP's JetDirect network interface card, which allows Macintosh users to connect via an Ethernet port. However, aside from their network capabilities and fast print speeds, there are more differences than similarities between these two workgroup models.

Apple LaserWriter 8500

RATING: ★★★½ **PROS:** Supports a wide range of paper sizes; full-bleed printing up to 11 by 17 inches; true Adobe PostScript Level 3. **CONS:** Expensive compared with competing products. **COMPANY:** Apple Computer (408/996-1010, www.apple.com). **COMPANY'S ESTIMATED PRICE:** \$2,500.

HP LaserJet 4000 TN

RATING: ★★★ **PROS:** Optical and interpolated 1,200-dpi resolution; speedy performance; good value. **CONS:** Some banding in graphics. **COMPANY:** Hewlett-Packard (800/527-3753, www.hp.com). **COMPANY'S ESTIMATED PRICE:** \$1,599.



LaserJet Blasts Past Faster-Rated LaserWriter

■ Best result in test. Times are in seconds. Shorter bars are better.

	Short Multi-font Memo	Long Single-Font Report	Spreadsheet	Illustration	Bitmapped Photograph	Newsletter	Web Browser
Hewlett-Packard LaserJet 4000 TN (17 ppm)	27	56	31	168	113	26	34
Apple LaserWriter 8500 (20 ppm)	29	55	36	190	224	31	31

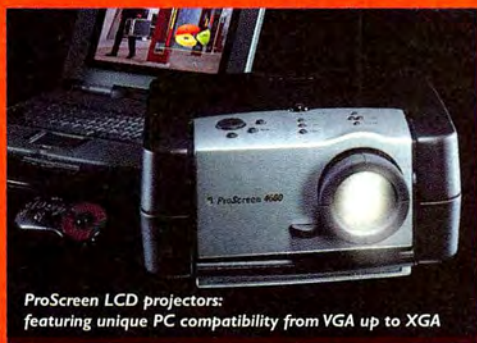
Behind Our Tests

For detailed information on our methodology, see "The Best Personal Printers," June 1997, or www.macworld.com/tests/. —Macworld Lab testing supervised by Suzanne Courteau

Facing a tough audience?



**Relax. You'll feel comfortable
and look good presenting
with a Philips LCD projector.**



ProScreen LCD projectors:
featuring unique PC compatibility from VGA up to XGA

Everything about the new Philips Brilliance LCD projectors is designed to boost your confidence. Unique Limesco technology offers future-proof PC compatibility and instant recognition of connected equipment. Hassle-free operation lets you concentrate on your performance, not your projector's. You'll impress your audience with award-winning picture quality. And with the Philips Ultra High Performance lamp you'll project brighter pictures for up to 5 times longer than with a conventional lamp. Sounds like what you need to win over your next audience? Call Philips directly 1-800-504-9978 or visit our Web site at <http://www.philipslcd.com>

Circle 13 on reader service card

Let's make things better.



PHILIPS

Serial-Port Multipliers

THREE CARDS ADD FOUR MODEM JACKS EACH—SORT OF

WITH EACH SUCCESSIVE model, the Mac's numbers look better—at least in terms of megahertz, RAM, and hard-disk space. But one important spec hasn't changed in 14 years: the number of serial ports, which remains steady at two (or one, on PowerBooks). Meanwhile, the number of devices vying for those jacks has exploded, making for a lot of plugging into and unplugging from jacks that weren't designed for such repetitive stress.

Three serial PCI cards, Creative Solutions' Lightning-PCI, Keyspan's SX-4, and MegaWolf's Romulus, each give you four additional modem ports to play with. Depending on your particular assortment of appliances, one of these cards may let you keep all your doodads plugged in all the time. But there are no guarantees: serial-port multiplication is a black art laced with gray areas, and no port multiplier works for all devices.

A Black Art

Understanding the modem-port shortage requires a bit of knowledge about Apple's Communications Toolbox. In the 1980s, serial-port programs were hard-coded to "speak" directly to your modem or printer port. Apple later created a flexible, expandable intermediary software layer called the Communications Toolbox (CT) to handle any current or future serial port, whether built-in or on a card.

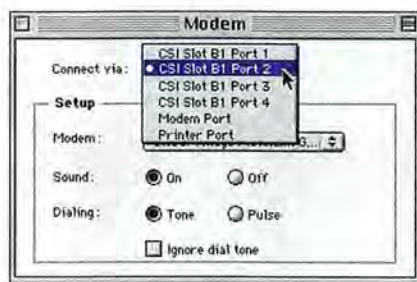
CT-savvy software works beautifully with the Lightning-PCI, Romulus, and SX-4. Simply install the card in your Mac and drop an extension into the System Folder, and you have six serial ports to choose from instead of just two. (Keyspan's \$229 SX-2 and MegaWolf's \$249 Remus add two ports instead of four; MegaWolf's \$724 Rufus card offers eight extra modem ports.) Your CT-savvy programs can even operate simultaneously on all your jacks.

If your primary interest is in modem software, you're in luck. Nearly every telecom program—including America Online, Open Transport/PPP, Apple Remote Access, SoftArc's FirstClass, and most fax software—is CT-savvy. (A few

nonmodem programs are also CT-savvy and work fine with these cards.) You can plug your modem into one of your new jacks, leave your printer in its traditional jack, and use your built-in modem port for a non-CT-savvy gadget.

The Plot Thickens

Unfortunately, life gets a little more complicated if you're hoping to accommodate more than one non-CT-savvy program, such as the software for MIDI gear, digital cameras, the Connectix QuickCam, LocalTalk, the GeoPort pod, or Seiko's label printer—and, surprisingly, Apple's own Chooser. Out of the



Ports Aplenty Comm Toolbox-savvy programs, such as Open Transport, instantly recognize port-multiplying cards such as the Lightning-PCI.

box, these products can't even *see* the Lightning-PCI, Romulus, and SX-4 serial cards. (The Chooser's lack of CT compliance is especially disappointing; it means that you can't move your printer to your new jacks.)

Software can help. The Lightning-PCI card's MagicPort control panel can route non-CT-savvy programs to one of your new modem ports. Alas, MagicPort works only for *applications*; it won't help desk accessories such as digital-camera plug-ins. The Lightning-PCI also includes MagicPrint, an extension that makes the Chooser CT-aware. With it, you should be able to move your ink-jet printer to one of the Lightning-PCI card's four ports—but MagicPrint doesn't work with System 7.6 or later.

A semisolution is to use Stalker Software's \$44 PortConnector, a control panel that can intercept data from *any* non-CT-savvy program and reroute it to

a PC Card modem or a port-multiplier card. Unfortunately, PortConnector's two "virtual ports" intercept *all* traffic destined for your modem and printer ports. Combined with a port-multiplier card, PortConnector lets you leave all your gadgets hooked up at all times—but you have to open PortConnector to switch from one device to another.

Macworld's Buying Advice

The extra jacks that the Lightning-PCI, Romulus, and SX-4 cards provide are fast, solid, and reliable—with CT-savvy programs. If one more port would remedy your shortage, buy the two-port SX or Remus card and plug your modem into it, leaving the Mac's built-in modem port free for other uses. If you have more than one non-CT-savvy application, buy a Lightning-PCI card instead and use its MagicPort software to set up your four new ports.

Through all this, remember two cold, hard facts of life. First, MIDI devices, the QuickCam, most digital cameras, and LocalTalk work *only* when plugged into built-in ports, no matter what. Second, for about \$30, you can buy an A/B box that redirects your modem port's attention to various devices with the turn of a knob, no RAM required.—DAVID POGUE

Lightning-PCI

RATING: \$\$\$ **PROS:** Accommodates a wider range of modem-port gadgets than the SX-4 and Romulus cards. **CONS:** Expensive; still doesn't work with some devices. **COMPANY:** Creative Solutions (410/766-4080, www.creative-solutions-inc.com). **LIST PRICE:** \$479.

Romulus

RATING: \$\$\$ **PROS:** Relatively inexpensive; works with Visioneer PaperPort; decent manual. **CONS:** Doesn't work with cameras, printers, and so on. **COMPANY:** MegaWolf (203/562-1243, www.megawolf.com). **LIST PRICE:** \$349.

SX-4

RATING: \$\$\$ **PROS:** Relatively inexpensive. **CONS:** No manual; doesn't work with QuickCam, MIDI, printers, and so on. **COMPANY:** Keyspan (510/222-0131, www.keyspan.com). **LIST PRICE:** \$329 (SX-2, \$229).

Permission to Engage

TOP GUN™

FIRE AT WILL

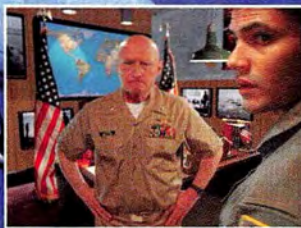
You are **Maverick**-
and you've got
your orders on your
mind, **Commander**
Hondo
on your back and
MiGs on your tail.
So fuel up.
Strap yourself in.
And let 'em know your **bark**
is nothing...
next to your **bite**.



High-resolution voxel engine creates a photo-realistic experience



Lead your wingmen into fierce dogfights and air-to-ground combat in over 40 missions



Only the best of the best graduate from Top Gun



Training missions at the Naval Air Station at Miramar prepare you for intense combat

TOP GUN © 1997 Paramount Pictures. All Rights Reserved. Spectrum HoloByte is an authorized user. Spectrum HoloByte is a registered trademark of Spectrum HoloByte, Inc. MicroProse is a registered trademark of MicroProse, Inc. or its affiliated companies. All other trademarks are the property of their respective holders.

MICROPROSE

800-229-2714

Call for a free catalog or visit our website at www.wizworks.com

MacSoft®

An Affiliate of CST Interactive Software
2300 Berkshire Lane, Pleasanton, CA 94566-1111 612.509.7600

Circle 23 on reader service card

QuickTime VR Authoring Studio

APPLE DELIVERS POWERHOUSE QUICKTIME VR PRODUCTION TOOL

ALMOST THREE YEARS AFTER releasing QuickTime VR, Apple has finally delivered easy-to-use QuickTime VR development software. QuickTime VR Authoring Studio 1.0, which replaces the Authoring Tools Suite, is straightforward enough for novices but sophisticated enough for high-volume VR production. It also compares favorably to third-party QuickTime VR development tools (see *Reviews*, November 1997): unlike those programs, Authoring Studio is able to handle all aspects of the QuickTime VR production process. It can make panoramic movies, which let users explore 360-degree views of a scene, as well as object movies, which let them "pick up" and rotate objects.

The Panoramic Landscape

Stitching a panorama in Authoring Studio is a straightforward process: you import your images and specify the focal length and field of view of the lens you used. Authoring Studio contains presets for several common 35mm lenses and Apple's QuickTake 150 and 200 digital cameras. You can also create new lens presets by using Authoring Studio's Lens Estimator. The final step is to click on the Stitch Pano button and then sit back and marvel as Authoring Studio combines your images and blends them to create a seamless panorama. (Don't worry if problematic images don't stitch perfectly; Authoring Studio's manual-stitching features are the best I've seen.) The result is a QuickTime VR panoramic movie and a PICT file containing the stitched images.

QuickTime VR Authoring Studio is the only VR production tool that lets you create a multiple-node panorama—a single movie file containing several panoramas linked via hot spots. You simply draw arrows in the Scene Maker window to connect the individual panoramas and create hot spots that link them.

Object Lessons

Authoring Studio's object-movie-making features are equally complete, supporting single-row object movies (which let users rotate an object) as well as multiple-row

movies (which let users examine an object from above and below while rotating it).

Making multiple-row object movies requires taking dozens of images, moving the camera and object precisely after each one. QuickTime VR Authoring Studio streamlines this arduous process by supporting the growing number of motorized object platforms being offered by third parties. Authoring Studio can communicate with a motorized object platform through AppleScripts, snapping frames and moving the object and camera as necessary after each frame. If you have a Mac with video-input capabilities, you

and go to lunch while Authoring Studio crunches through each movie.

Although QuickTime VR Authoring Studio is beautifully designed and implemented, it saves movies in QuickTime VR 2.1 format, which can't be played by Windows versions of QuickTime prior to 3.0 (still in beta testing as of this writing). Although QuickTime VR 2.1 and QuickTime 3.0 offer significant advantages over their predecessors, it will be some time before most Windows users upgrade. For now, at least, that means the QuickTime VR 1.x format is preferable for Web-destined movies. It also means you have to run Authoring Studio's output through a conversion utility to produce QuickTime VR 1.0 movies. Apple's free conversion utility should be available by the time you read this; meanwhile, you can use ConVRter (\$20), from VRtools (www.vrtools.com).



A VR Studio Authoring Studio's Project Manager (upper left) makes short work of creating complex projects, while the Panorama Stitcher (bottom) combines images seamlessly (upper right).

can digitize the frames for an object movie directly within Authoring Studio. The program's video-capture window displays guides and crosshairs that help you position the object and camera.

Managing Your Media

A large QuickTime VR project can comprise dozens of VR movies and hundreds of source images. QuickTime VR Authoring Studio's Project Manager window helps you tame this morass of media by acting as a container for object movies, panoramic movies, and scenes. You use the Project Manager to add icons that represent each VR movie the project will contain. Double-clicking on one of the icons opens the appropriate Authoring Studio tool; you specify the particulars for that movie—its source images and movie settings—and move on to the next one. When you've finished, click on the Build Project button

Macworld's Buying Advice

Does QuickTime VR Authoring Studio blow away the third-party competition? Not quite. Panimation's Nodester remains a superb choice for creating single-node movies,

thanks to its built-in image editor, support for QuickTime VR 1.x, and \$169 price tag. Another program to watch is PictureWorks' Spin Panorama 2.0, which adds automatic stitching; it's due to ship by the time you read this. These tools can't create multiple-node panoramas, however, nor can they match Authoring Studio's rich array of project-management features. QuickTime VR Authoring Studio is the ultimate QuickTime VR production tool.—JIM HEID

RATING: ★★★★★/5 **PROS:** Elegant user interface; creates multiple-node panoramas; excellent project-management features. **CONS:** Can't save in QuickTime VR 1.x format. **COMPANY:** Apple Computer (408/996-1010, <http://quicktimevr.apple.com>). **LIST PRICE:** \$395; upgrade from Authoring Tools Suite, \$199.

PLAY TO WIN CASINO™

AUTHENTIC VEGAS GAMEPLAY. THE BEST STRATEGIES, TIPS & TRICKS.



LEARN AS YOU PLAY, NOT AS YOU PAY

- Fast, responsive, highly-realistic casino action
- Tips & tricks integrated into every game
- Optional step-by-step instructions for beginners and advanced strategies for experts
- On-the-fly expert advice. Ask the computer what to do
- Optional warning system alerts you to high-risk bets
- Game and Wager Summaries let you analyze your playing habits
- Complete glossaries and on-line help



ROULETTE



SLOTS



VIDEO KENO



CRAPS



BLACKJACK



VIDEO POKER

Available at Retailers Everywhere!

800-229-2714

Call for a free catalog or visit our website at www.wizworks.com

System Requirements: Any Macintosh running system 7.0 or higher with at least 4MB RAM, CD-ROM drive and 256-color monitor (thousands of colors recommended)

©1997 Varcon Systems, Inc.



Circle 30 on reader service card

MacSoft®

An affiliate of GT Interactive Software Corporation
2300 Berkshire Lane No., Plymouth, MN 55441 • 612-509-7600
Call for a free catalog or visit our website at www.wizworks.com

Interpol

FIREWALL IN A BOX

WHEN YOU CONNECT YOUR LAN to the Internet, a firewall is essential—both to keep interlopers out and to control the Internet services users are accessing. Until now, you had to choose between inexpensive but limited router-based, packet-filtering firewalls and full-featured but expensive computer-based proxy firewalls. Sonic Systems' Interpol falls somewhere between the two in both price and capabilities; this dedicated network appliance offers access protection, network-address translation, public-server connectivity, content filtering, and even telecommuting. Its Web administration and automatic content-filter updating make this the easiest of all firewalls to set up and maintain.

The Interpol is a simply designed, modem-size box with three identical Ethernet ports and three corresponding sets of status lights. One port connects to your Internet router with a supplied Ethernet crossover cable, the second connects to your LAN hub, and a third optionally connects to one or more servers the public can access via your Internet connection. Sonic thoughtfully provides both 10BaseT and coaxial Ethernet connections for each port, making the unit easy to connect with older network gear. Once you've attached the Interpol to your network, configuration takes just a few minutes using any Web browser on your LAN. The comprehensive user's guide explains IP-addressing fundamentals and offers step-by-step setup instructions.

Surfing Setup

The Interpol's Web-based administration features are a joy to use and a model of quality Web-interface design. Using Java to ensure security, the Interpol requires an administrative password for access. A main status page displays at-a-glance status as well as a summary of pending warning and alert messages; a more detailed message-history page records firewall access as well as any attempted security breaches. You can configure the Interpol to mail the message log to you automatically at regular intervals, a refreshing

improvement over the Unix-logging approach of more traditional firewalls.

A series of Web pages lets you configure the Interpol's various features. You can set up the Interpol as a screening firewall, where your users all have Internet-routable IP addresses, or as a network-address-translation (NAT) firewall, where your users all get private addresses. The screening approach gives you the flexibility of allowing telecommuter access through the firewall to individual machines on your network, to run Netopia's Timbuktu or AppleShare IP, for example. A configurable user list lets you establish up to 100 telecommuting users. Using a



SUZANNE BOADY

Web browser, a remote user connects to the Interpol by entering one of the listed user IDs and passwords; the Interpol then creates a temporary hole through the firewall for that user's single IP address, automatically closing the hole after a predetermined period of inactivity. (The screening configuration requires that your ISP supply an IP address for each of your network users, which will likely entail additional service fees.) The NAT configuration prohibits telecommuter access, but it's more secure and requires only a single Internet-routable IP address from your ISP.

Solid Security

The Interpol automatically protects all connected devices from the three currently known denial-of-service attacks: IP spoofing, Ping of Death, and Syn flooding. By default, the Interpol blocks all incoming connections to computers on your LAN but permits all outgoing connections; that way, your users have transparent network access without being exposed to the Internet directly. Because you can open holes in the firewall for individual servers, your servers can run from behind the firewall. A better option, however, is to connect public servers to the

Interpol's third Ethernet port. Anyone on the Internet can access these servers freely, but you avoid denial-of-service attacks and letting public Internet traffic onto your protected network.

One of the Interpol's most interesting features is a built-in, self-updating content filter that lets you block specific categories, such as content dealing with the drug culture or pornography. The software uses a combination of IP addresses and URL matching to detect and block inappropriate sites, so it's not as comprehensive as filtering products that also scan Web-page content. For an annual subscription fee, you can have the Interpol automatically download an updated filter list each week. You can also block all Usenet news access and disable Java and ActiveX applets to prevent security breaches.

I tested the Interpol on a large corporate network with more than 100 users and a 1.5-Mbps T1 Internet connection. It had no problem keeping up with the traffic flow, and all security features worked as advertised. Although it lacks some of the features—dynamic port mapping, for example—of more sophisticated (and expensive) firewalls, the Interpol will meet most small networks' requirements.

The one conspicuously missing feature—Dynamic Host Configuration Protocol (DHCP)—will be added in a future release, according to Sonic, as will scanning of Web-page content. The Interpol's Web-uploadable firmware makes installing software upgrades painless.

Macworld's Buying Advice

The Interpol is an excellent all-in-one solution for protecting a network. To get equivalent protection with a traditional firewall, you'd have to buy a dedicated firewall computer, routing software, and a content-filtering package and spend several days getting it set up. With its Web-configuration interface, content filtering, upgradeable firmware, excellent security, and comprehensive feature set, the Interpol is simply a great deal.—MEL BECKMAN

RATING: ★★★★★ **PROS:** Web-configuration interface; translates network addresses; DMZ support; content filtering; excellent performance. **CONS:** Lacks DHCP support. **COMPANY:** Sonic Systems (408/736-1900, www.sonic.com). **LIST PRICE:** \$1,499; with a filter-list subscription, \$1,999.

Alternative MIDI Sequencers

FREESTYLE AND METRO STRIKE BACK AGAINST MIDI BLOAT

IT'S EASIER TO MAKE MIDI MUSIC on a Mac than on other computers, but that's not saying much. Today's best-selling sequencers, Opcode Systems' Vision and Mark of the Unicorn's Performer, have become so sophisticated that they can overwhelm the hapless songwriter who just wants to produce a decent-sounding demo tape. Mark of the Unicorn's FreeStyle 2.01 and Cakewalk's Metro 3.5, both newly overhauled, attempt to simplify MIDI recording without curbing flexibility. Each departs dramatically from the Vision/Performer mold, and each is a smashing success in its niche.

An Easy Ride on the Metro

Unlike Vision, Performer, and FreeStyle, Metro requires no key disk or hard-drive authorization as copy protection; instead, it cheerfully asks—on day 1 only—that you type in a programmer's name from a specific page of the manual. And Metro is the only professional sequencer that requires no system extensions, a chronic headache for MIDI musicians.

One Metro window lists each track's name, synthesizer sound, sound-level graph, and map of recorded measures. A second window—an impressive graphic editor—displays each note as a bar on a timeline, ready for mouse manipulation. In the third window are tape-deck-style controls, such as Play and Rewind; a counter; and tempo, looping, punch-in/punch-out, and count-off buttons. You process your music by using the usual arsenal of menu commands, such as Quantize, Transpose, Human Feel, and Velocity.

This design should sound distinctly familiar to Performer users; in fact, Metro 3.5 is surprisingly reminiscent of, say, a 1992 copy of Performer, right down to the keyboard shortcuts and somewhat homemade look. But Metro costs half as much and runs on every Mac back to the Macintosh Plus in as little as 800K of RAM. It lacks a sheet-music view but otherwise offers a state-of-the-art feature list:

chunk-based song rearranging, SMPTE time-code support, animated mixing faders, OMS support, and more.

Metro also offers a few features all its own. For example, it can run concurrently with Macromedia's Deck II digital-audio program, jog your inspiration with a "rhythm explorer" that plays your piece in various rhythmic grooves, and even sync up with a QuickTime window so you can compose a movie



Song Building Made Easy Both FreeStyle and Metro let you build a song by rearranging chunks on a timeline.

score while viewing the scene. Metro's only significant drawback is the unnecessarily technical manual.

The Sequencer Rethought

If Metro is Performer in a time warp, FreeStyle is from another planet. Its refreshing design halves the typical sequencer's complexity, particularly if you have a General MIDI-labeled synthesizer. A long list of innovations sets FreeStyle further apart from its rivals. For example, FreeStyle intelligently records and plays back pickup notes (even in the case of repeats). You can "scrub" (listen to the music under your dragged cursor) in bargraph as well as sheet-music views. If you wish, the program can start and stop recording automatically. An unlimited "takes" feature quietly stores every attempt you make at recording a track; later, you can select the best parts of each. And you can control the software by pressing keys on your synthesizer, so you don't have to keep rushing back to your Mac.

Loop Override is a stroke of genius:

FreeStyle can endlessly repeat a measure or two through an entire song, as is typical in drum tracks. But what drum part *never* changes? Loop Override momentarily replaces the looping with snippets or fills you've recorded at specific spots.

FreeStyle is delightful, but it's not perfect. The copy-protection scheme is nerve-racking and intrusive. The new Sense Tempo command purports to free you from having to record to a metronome's click, continuously analyzing your playing to calculate which beat you're on—but it rarely works. And while FreeStyle's notation view turns whatever you play, even *as* you play, into fully beamed sheet music, you can't add articulation markings, proper dynamics, note-attached lyrics, metronome markings, or other standard sheet-music elements, and there's no way to hide an empty staff.

Macworld's Buying Advice

If you're a sophisticated MIDI-head unafraid to stray from the herd of Vision and Performer users, Metro's long list of high-end features (and its modest resource demands) make it worth considering for the heart of a MIDI studio. FreeStyle, on the other hand, is nearly irresistible. This program will bring delight to first-timers and relief to complexity-weary veterans.—DAVID POGUE

FreeStyle 2.01

RATING: ★★★★★ **PROS:** Simplifies MIDI setup; ingenious scrubbing, pickup, keyboard-control, and looping features; impressive sheet-music transcription. **CONS:** Intrusive copy protection; sheet-music features extremely limited. **COMPANY:** Mark of the Unicorn (617/576-2760, www.motu.com). **LIST PRICE:** \$195.

Metro 3.5

RATING: ★★★★★ **PROS:** Runs even on a Mac Plus; with no extensions or key-disk requirement; sophisticated feature list. **CONS:** No sheet-music mode; unnecessarily technical manual. **COMPANY:** Cakewalk (617/441-7870, www.cakewalk.com). **LIST PRICE:** \$199.

"My business can't stop when the power does..."

Back-UPS® Office™'s instant battery back-up can keep you up and running even when the power goes down.

only
\$125
list price

... I rely on
Back-UPS® Office™ from APC.



"I've got Back-UPS® Office" from American Power Conversion. Back-UPS Office combines world class surge protection, a \$25,000 equipment protection guarantee* and instant, uninterruptible battery back-up power.

So when the power goes out, and it will.... I have plenty of time to save what I am working on and shut down safely.

Plus, I am protected from surge damage, keyboard lock-ups, data loss



Look for APC power protection products - starting at \$24.95

and power problems transmitted to my workstation over data and power lines."

So, if you just bought your first computer, or run a company that needs hundreds, you can depend on the reliability and peace of mind that comes with APC products. Why? It's simple. APC protects more computers for more companies in more countries than anyone in the world.

Now, that's a reason to smile.

APC's Back-UPS Office is available at:

MacMall
1-800-328-2790

MacWAREHOUSE
1-800-255-6227

FREE Consumer Catalog



- ☐ **YES!** I'd like to receive my FREE catalog.
☐ **NO,** I'm not interested at this time but please add me to your quarterly newsletter mailing list.

Name: _____
Title: _____
Company: _____
Address: _____
City/Town: _____
State: _____ Zip: _____ Country: _____
Phone: _____ Fax: _____
of Macs on site? _____
Brand of UPS used? _____ # _____
Brand of Servers used? _____ # _____

APC
888-289-APCC x8320
Fax: (401) 788-2797
www.apcc.com

D7-C3

©1998 APC. All Trademarks are the property of their owners. * See policy for details. BF22EF • (800)347-FAXX PowerFax • E-mail: apcinfo@apcc.com • 132 Fairgrounds Road, West Kingston, RI 02892 USA

APC has won more awards for reliability than all other UPS vendors combined.



Circle 72 on reader service card

Video-Effects Software

PLUG-INS SIMULATE FILM, ADD TRANSITIONS

AFTER EFFECTS USERS, YOUR universe has just expanded. Three new plug-in collections have joined the sizable array of third-party add-ons that tap into Adobe's video-effects powerhouse. DigiEffects' CineLook Broadcast 1.0 simulates the look of motion-picture film, right down to the dust and scratches. Artel Software's Boris FX 3.0.3 creates impressive 3-D and color effects; it also works with Adobe Premiere and Data Translation's



Filmmaking CineLook's exotic interface simplifies parameter adjustments by displaying thumbnail previews of various settings.

Media 100. Finally, Alien Skin Software's Eye Candy 3.0 for After Effects provides a grab bag of visual sweets.

The Look of Film

Videotape and digital video are economical and convenient, but they lack the rich look of film. The grain of a film's light-sensitive emulsion, its unique color sensitivity, and the shutter movement of a movie camera and projector combine to create a richness that makes videotape look harsh and clinical by comparison.

With DigiEffects' CineLook Broadcast, you can give your digital video the look of film. CineLook doesn't just add faux grain—its presets mimic the characteristics of dozens of commercial films from Agfa, Fuji, and Kodak, in color and black-and-white 8mm, 16mm, and 35mm stock. In addition, several offbeat presets simulate old movies and deliver grungy effects suitable for MTV. The Film Damage plug-in, for example, gives clips a vintage look by simulating scratches, dust, and projection stuttering.

You can customize any of CineLook's 52 parameters within each preset to tweak grain size, color balance, shutter motion, and more. You can also use After Effects keyframes to animate the parameters over time and create new presets to recall your favorite settings. CineLook's beautifully designed user interface streamlines the adjustment process (see "Filmmaking").

CineLook Broadcast limits the frame size to 768 by 486 pixels. Thus, if you're outputting to film, you'll need the \$1,995 CineLook FilmRes; it supports After Effects' maximum frame size of 4,000 by 4,000 pixels. FilmRes should be available in the first quarter of 1998.

Boris FX Meets After Effects

Boris Effects has long been a must-buy for Premiere and Media 100 users, offering sophisticated motion control, 3-D image mapping and transitions, and color keying (see *Reviews*, January 1997). Boris FX 3.0 is the first version that also runs under After Effects. The good news is that virtually all of its features have made it into After Effects; the bad news is that adjusting effect parameters within After Effects is less than straightforward. In Premiere and Media 100 systems, Boris FX offers an attractive interface that lets you, for example, drag a 3-D cube to specify its rotation. When you use Boris FX under After Effects, however, you must specify all parameters using After Effects' bare-bones Effects Settings window, which offers no such luxuries.

Still, being able to access Boris FX's arsenal from within After Effects is a boon. Boris's DVE effect, for example, makes short work of creating clips that spin and tumble, complete with feathered borders and drop shadows. Version 3.0 also adds a large selection of curvilinear filters that let you add ripple, bulge, and wave effects, along with color-correction filters for adjusting brightness and contrast, creating tints, and solarizing.

Making Eye Candy

Alien Skin's Eye Candy is a popular Adobe Photoshop effects plug-in (see *Reviews*, August 1997); Eye Candy 3.0 for After Effects puts 19 of that package's best

filters and effects into motion. Most are true to Eye Candy's name: the Squint filter simulates an out-of-focus lens; Jiggle produces a bubbling distortion; and Star draws stars, triangles, and other polygons. Unlike their counterparts in the Photoshop version of Eye Candy, however, these filters can be animated. You can use them to make something gradually come into or go out of focus, for instance, or create stars that spin and change color.

While CineLook and Boris FX add unique capabilities to After Effects, Eye Candy for After Effects has some stiff competition, which makes its \$599 price tag a bit tough to swallow. Two similar candy factories, DigiEffects' Aurorix 2 and Berserk, sell for just \$289 each.

Macworld's Buying Advice

CineLook Broadcast is the most groundbreaking of these three collections, bridging the gap between digital video and film as no other personal-computer-based product has to date. At \$695, however, it isn't for casual users. Boris FX 3.0.3 is an outstanding upgrade of an already stellar product, and it's one of the few effects plug-ins that works with Premiere as well as with After Effects. And Eye Candy 3.0 for After Effects offers some appealing filters and effects you won't find in other products.—JIM HEID

Boris FX 3.0.3

RATING: ★★★★★ **PROS:** Extremely versatile array of effects and transitions; also works with Adobe Premiere and Data Translation's Media 100. **CONS:** Native user interface unavailable in After Effects. **COMPANY:** Artel Software (617/451-9900, www.artelsoft.com). **LIST PRICE:** \$495 (Media 100 version, \$695).

CineLook Broadcast 1.0

RATING: ★★★★★ **PROS:** Stunning film simulation; superb interface. **CONS:** No printed documentation. **COMPANY:** DigiEffects (415/841-9901, www.digieffects.com). **LIST PRICE:** \$695.

Eye Candy 3.0 for After Effects

RATING: ★★★★★ **PROS:** Appealing mix of filters; good documentation. **CONS:** A bit pricey. **COMPANY:** Alien Skin Software (919/832-4124, www.alienskin.com). **LIST PRICE:** \$599.



STAMP OUT RETYPING WITH THE WORLD'S MOST ACCURATE OCR.

New OmniPage Pro 8.0. Over 99% accurate—guaranteed!

Don't retype another letter, report, fax or article into your computer ever again. New OmniPage Pro 8.0 for Macintosh easily converts your scanned pages into editable text and graphics in seconds. Which means you can quickly input text into your favorite applications like Word, WordPerfect, Excel and others. OmniPage Pro 8.0 is a quantum leap



The AutoOCR Toolbar™ performs OCR with a single click.

"OmniPage Pro is as good as it gets."

MacWeek January 27, 1997

forward in OCR accuracy, even when compared to version 7.0. What's more, it offers dramatic accuracy improvements when you OCR poor-quality documents — faxes, small text, skewed pages, reversed-out type, bad copies and more.

Don't settle for anything less than the most accurate OCR in the world. Call now to order, or visit your local reseller today. Who knows, they may even let you trade in your old keyboard.

- Easy-to-use, one-click OCR
- Maintains original page layout
- Now saves color images in color—not black and white
- Proofreads OCR results
- Seamlessly integrates with Microsoft Word
- OmniPage Guide provides comprehensive online help
- Outputs to HTML 3.0, and more!

UNIVERSAL UPGRADE

\$129**

SAVE OVER 75%
SPECIAL UNIVERSAL
UPGRADE FOR ALL
SCANNER OWNERS!

800-736-5735 x.80



*Using standard fonts on laser-quality documents. If for any reason you are not satisfied that OmniPage Pro 8.0 dramatically improves your OCR accuracy, return it for a full refund (less shipping and handling). **Suggested price US dollars—subject to change without notice. Offer valid in US and Canada only. Caere, the Caere logo, OmniPage, and OmniPage Pro are registered trademarks and AutoOCR Toolbar is a trademark of Caere Corporation. All other names are the property of their respective holders. © 1997.

Circle 69 on reader service card

Java-Based Web Multimedia Tools

EMBLAZE CREATOR, MBED INTERACTOR, AND WEBMOTION DELIVER MIXED RESULTS

JAVA MAY OR MAY NOT TRANSFORM computing as we know it, but this programming language is definitely making its mark on the Web. Among other things, Web developers are taking advantage of Java to spice up their sites with animation and enhanced user interfaces—ones whose buttons highlight and play a sound when clicked, for example, as they might in a CD-ROM title.

Three new authoring programs that let you create Java-based animations and interfaces are Astound's \$69.95 WebMotion 1.0, Geo Publishing's \$995 Emblaze Creator 2.5, and mBed Software's \$249 mBed Interactor 1.1. Of the three, WebMotion is the cheapest, easiest, and most limited, suitable primarily for creating basic animations and interfaces. Emblaze Creator and mBed Interactor are much more complex and capable, supporting streaming audio (and in Emblaze Creator's case, audio and video) and allowing for more-sophisticated projects, such as interactive games.

All three programs let you import media elements, such as graphics and sounds, created in other programs. From there, you position elements within a layout window whose dimensions match those of your final project. You can animate elements and specify interactivity—for example, you can turn a graphic into a clickable button by assigning it a URL. When you're finished, you can embed the final product in an HTML page.

Surveying the Environment

In spite of their common ground, each program paves its own path to the browser. The simplest of the three is WebMotion, which sports just four menus. You import graphics to create *actors*, WebMotion's term for the cast of characters that appear on screen. When you've finished, you can save your efforts as an HTML page containing the tags necessary to play the animation. You can also save your project as an animated GIF file, but at the expense of interactivity and sound.

Where WebMotion opts for simplicity, Emblaze Creator thinks it's Macromedia Director. But although you store

media elements in a MediaBank window akin to Director's Cast window and build the project using a TimeLine window similar to Director's Score window, Emblaze Creator is no Director. Its performance is glacial, it crashed occasionally during testing, and its interface strays too far from standard Mac OS interface guidelines and relies too heavily on often-incomprehensible tool bars.

mBed Interactor takes a completely different approach. You create a project out of building blocks called *players*; you

containing a set of HTML-like tags describing your project's media elements, animations, and interactivity.

While WebMotion and Emblaze Creator are Java-centric, meaning that users won't need a plug-in to view them, mBed Interactor lets you author in any of three modes depending on your project's requirements and the target browsers. In Dynamic HTML mode, Interactor's end product is a Dynamic HTML page that works with both Netscape Navigator 4.0 and Microsoft Internet Explorer 4.0. In

Java mode, Interactor relies on an included Java applet to play back embedlets. And in its native mode, Interactor requires users to download the mBed browser plug-in or ActiveX control.

Manipulating the Media

Another key point of comparison concerns the way you work with media elements. Emblaze Creator's rudimentary vector-drawing tools let you create various shapes; with WebMotion and mBed Interactor, you must create all graphics in a separate program and import them. Emblaze Creator can also import QuickTime movies and AIFF sounds. But importing video and audio can be tricky: you have to use a video-editing package to resize QuickTime movies to one of three non-standard pixel resolutions. If you try to import a 160-by-120-pixel movie, for example, you get an error message. Sound fared only slightly better in my tests, with Emblaze Creator tending to crash during the import process.

mBed Interactor supports sound in two ways. For short clips—such as a click sound effect that plays when the user presses a button—you can import sounds stored in AU or WAV format. Neither is native to the Mac OS; you have to use a sound editor such as Macromedia SoundEdit 16 or Bias's Peak.



Media Makers Emblaze Creator's interface (top) borrows from Macromedia Director's but relies too heavily on arcane tool bars. With mBed Interactor (bottom) you create interactivity by choosing commands from pop-up menus.

can choose from 12 types of players, including sounds, buttons, animation paths, and effects. The process is fast and efficient once you get the hang of it, and a built-in, interactive tutorial helps you get up to speed (though more details in the manual would be a welcome improvement). The result is an *embedlet*, a text file

Both Emblaze Creator and mBed Interactor support streaming audio, essential for playing lengthy clips such as songs. Emblaze relies on its own streaming scheme, which offers only fair sound quality and playback reliability; mBed Interactor does it right by supporting an industry standard, RealNetworks' RealAudio. This makes mBed Interactor ideal for creating a customized interface, such as an on-screen jukebox, for RealAudio content. You can also synchronize an animation's playback to a RealAudio file.

As for text, forget about built-in word-processor windows like those in Director—the best you get from these three are text-entry boxes for headlines and the like. And those headlines will be poorly spaced, because none of the three programs offers character-level kerning. Only mBed Interactor can import text files, display scrollable text blocks, and create antialiased text.

Animation and Interactivity

On the animation front, all three programs make it easy to create such effects as moving text banners and bouncing balls. Creating animation paths is easiest in WebMotion and mBed Interactor, both of which let you draw and edit paths directly within the project window.

The ability to create enhanced forms of interactivity is one of the best reasons to use a Java authoring tool. WebMotion supports the narrowest range of interactivity options; you can specify that one of several things happen when a user single- or double-clicks on an element—go to a URL, go to a different frame of the animation, play a sound, pause playback, or change playback speed. WebMotion can't create multiple-state buttons (ones that change shape or color when the mouse pointer is over them or when they're clicked on).

Emblaze Creator offers two paths to interactivity. At the basic level, you can create clickable buttons by filling out a dialog box; at the advanced level, JavaScript programmers can create scripts that add more advanced forms of interactivity, such as zooming in on an image when a user clicks on it. The advantage of this approach is that nonprogrammers can implement common forms of interactivity without programming, while more advanced users can tap into JavaScript.

In mBed Interactor, you add interactivity by assigning *handlers* to players. A

handler looks much like a script, but you create it by choosing options from a pop-up menu—no typing required.

Macworld's Buying Advice

If all you want to do is spice up your animations with occasional sounds and some interactive buttons, Astound's WebMotion is the best choice of the three; it's inexpensive, straightforward, and well-documented. Of the two high-end authoring tools, mBed Interactor is the one to watch. Besides being cheaper, faster, and more reliable than Emblaze Creator and less complex than Director, it supports industry standards such as RealAudio and Dynamic HTML.

You might want to investigate Macromedia's Flash 2.0 (see *Reviews*, September 1997); it also works with RealAudio, and it now supports Java-based playback without requiring plug-ins. Just remember that adding any Java-based content to your Web site introduces potential compatibility and reliability problems. Older browsers and offbeat surfing devices such as TV set-top boxes may not speak Java, and those that do can crash when running complex proj-

ects. Until these issues are resolved, Java-based animation and interfaces will take a back seat to good old HTML, JavaScripts, and animated GIFs.—JIM HEID

Emblaze Creator 2.5

RATING: ★★ **PROS:** Advanced interactivity options. **CONS:** Slow; buggy; expensive. **COMPANY:** Geo Publishing (818/703-8436, www.emblaze.com). **LIST PRICE:** \$995.

mBed Interactor 1.1

RATING: ★★★★★ **PROS:** Versatile authoring environment and playback options; excellent RealAudio support. **CONS:** Inadequate documentation. **COMPANY:** mBed Software (415/778-0930, www.mbed.com). **LIST PRICE:** \$249.

WebMotion 1.0

RATING: ★★★★★ **PROS:** Inexpensive; easy to use. **CONS:** Limited interactivity options. **COMPANY:** Astound (415/845-6200, www.astound.com). **LIST PRICE:** \$69.95.

Jan once spent all day making
"Effective Time Management"
training manuals. Ironical, isn't it?



Avery® Ready Index® Dividers 11131

Poor Jan didn't realize how much time she was wasting. With Avery® Ready Index® dividers, you just create a customized table of contents page on your computer that matches up with the pre-printed tabs. And it's a breeze thanks to preset layouts in Microsoft® Word, WordPerfect® and LabelPro®. Jan's days are still busy, but now she has time for other things, like lunch.

AVERY
How will you use us today?
www.avery.com
1-800-477-4404 x167
Call for free sample pack.

RUN



On Your Macintosh® For PCI Based Macintosh

Orange Micro®

OrangePC 550: 12" PCI featuring 3D Video and 3D Wavetable Sound, 512KB Cache, 4MB Video SGRAM, Serial, Parallel, Game and Sound In/Out Ports.

Orange PC 550 12" PCI Pentium Compatible
Cyrix 166*, 16MB RAM and Windows 95 from.....\$1032

OrangePC 536 7" PCI Pentium Compatible
Cyrix 166*, 16MB RAM and Windows 95 from\$799
*Intel and AMD K6 Processors also available.

32 Bit Drivers for Windows 95 Upgrade\$39
OrangePC 400/500 series only.

Insignia Solutions®

SoftWindows 95 v.4.0 for Power Mac.....\$199

Connectix®

VirtualPC\$159

MacPowerhaus™
Specializing in Mac/Windows Solutions

(800) 615-3183 (714) 693-3718
email: info@macph.com

Circle 34 on reader service card

InterJet 200

EASY INTERNET ACCESS AT T1 SPEED

LIKE ITS PREDECESSOR, THE InterJet 100/150 (see *Reviews*, June 1997), the InterJet 200 is a Web-administered, toaster-size box containing everything you need to put your network on the Internet. But unlike its predecessor—and other all-in-one Internet solutions—this version isn't limited to ISDN's 128-Kbps speed; the InterJet 200 boosts the speed limit to an amazing 1,544 Kbps by adding support for a leased digital T1 line. Just be aware that you must use an Internet service provider (ISP) that specifically supports the device (at the moment that includes more than 150 regional ISPs and 1 national ISP).

The new model offers the 100/150's two Ethernet ports; DHCP, DNS, mail, and Web servers; firewall; and communications ports. A new synchronous port supports bandwidths of up to 1,544 Kbps over a T1 or fractional T1 line using an external channel service unit (not included). The InterJet 200's dual Ethernet ports let you connect optional public Web servers to form a perimeter network outside the InterJet's firewall.

Setup consists of connecting all the cables and entering a 24-digit code in the unit's front panel; the InterJet then calls your ISP and configures itself. Your office computers—Mac, Windows, or Unix—configure themselves using DHCP. The new software features front-panel access to status and diagnostic information, new dial-up scheduling options, Web-page caching, and remote POP-3 e-mail access so users can check their messages when they're away from the office.

Macworld's Buying Advice As long as you don't mind being limited to one of the Whistle-authorized ISPs, you'll find the InterJet 200 to be the easiest and cheapest route to a full-service, dedicated Internet connection.—MEL BECKMAN

RATING: ★★★★★ **PROS:** One-step configuration; Web-based administration; cross-platform Internet services and file serving; perimeter LAN; up to dedicated-T1 speed. **CONS:** Still works only with specific ISPs. **COMPANY:** Whistle Communications (650/577-7000, www.whistle.com). **LIST PRICE:** \$3,495.

DenebaCAD

DRAFTING IN 3-D

MOST ARCHITECTS WILL TELL you that their clients aren't buying wiring diagrams or a bill of materials; they're buying dreams. That's why architectural CAD has a unique requirement among CAD specialties: after all the 2-D layouts have been drawn, the software had better produce some pictures beautiful enough to make people want your work.

Deneba Software's DenebaCAD 1.0.2 shines—literally—at controlling surface reflections, transparency, lighting effects, and other photo-realistic details. If you've got the time and processor power, it can also generate QuickTime VR walk-throughs of your structures and stereoscopic 3-D blue-red drawings (stereo glasses are included). DenebaCAD's ability to produce stunning visuals is unmatched by any CAD package short of Bentley's \$3,995 MicroStation 95 (see *Reviews*, December 1997). The ray tracing in renderings results in spectacular realism, and the resolution and antialiasing of renderings can be optimized for particular displays.

With its advanced 2-D capabilities, however, the program is more than just basic CAD grafted onto the sculpting and rendering features of Deneba's Canvas. Its chamfering and filleting tools are complete and intuitive, and you can specify dimensioning according to SAE or DIN standards. DenebaCAD also gives you more ways to handle free-form curves than Diehl Graphsoft's MiniCAD 7 or IMSI's TurboCAD 2D/3D 3.0. Its line control is flexible, with freely variable line width and a choice of line eccentricities, and its 2-D and 3-D Boolean operations can work with arbitrarily reshaping groups of objects. In fact, DenebaCAD's 2-D and 3-D functions are so well integrated that you can start with 2-D drawings and extrude and spin your way into the 3-D world. Or if you prefer, you can start in 3-D, using objects from the library, and have DenebaCAD generate 2-D drawings from your 3-D views. If your background is mainly in 2-D drafting, you can expect to spend considerable time mastering all the 3-D features here.

A nice drawing touch in DenebaCAD lets you combine a floating Layers palette with an unlimited number of open windows, so you can rapidly click through a



Light Lines DenebaCAD can import drawings from nearly any other CAD program and use them to produce picture-perfect renderings.

structured assortment of project views (all simultaneously updated). The program's long list of import/export formats includes nearly error-free DXF and DWG translation, making DenebaCAD an impressive walk-through generator using DXF files from other programs as input.

DenebaCAD's main shortcoming as a high-end CAD system is its lack of a programming language, whether through scripting, macros, or a simple syntax of its own. Another deficiency is reliance on a special Save As option to save a description of your drawing and its details as a

plain text file for export to word processors or spreadsheets. The program also shows some evidence of version-1.0 haste: misspellings in file names wreak havoc with the examples, and endlessly repeated error messages can arise from a single command. Library content is uneven, with lots of furniture but not enough building hardware. And some material you would expect to appear in the manual shows up in various PDF files instead.

Macworld's Buying Advice

DenebaCAD packs considerable value into this package, from more-than-competent 2-D drafting to the most impressive architectural rendering this side of \$1,000. Once its version-1.0 problems and lack of a macro language are remedied, it will be a top choice as an all-in-one package for architects.—CHARLES SEITER

RATING: ★★★½ **PROS:** Superior architectural renderings; good 2-D and 3-D CAD capabilities.

CONS: Lacks programmability; some betalike glitches. **COMPANY:** Deneba Software (305/596-5644, www.deneba.com). **LIST PRICE:** \$799.95.

Don't make a
"My new cards aren't ready...
hand me your cocktail napkin."
first impression.



DeeAnn Wood
Regional Manager
D.P. International

6025 W. Main Street
Bart, Illinois 50609

PH (818) 555-1610
FAX (818) 555-1616

Avery® Business Cards (Ink Jet 8377/Laser 5377)

A networking guru like you, wait on a print shop? Ha! Now you can create Avery® business cards instantly on your laser or ink jet printer, which is great for customized designs in any quantity. And it's simple, thanks to preset layouts in Microsoft® Word, WordPerfect® and LabelPro®. Knowing this, wouldn't you rather just leave the napkins with the caterers?



Avery

How will you use us today?™

www.avery.com

1-800-477-4404 x167

Call for free sample pack.

Order The Training You Need Now

Circle 106 on reader service card

MacAdministrator 1.6

EVOLUTIONARY, NOT REVOLUTIONARY

EASE OF USE HAS ALWAYS MADE the Mac a great instructional machine, letting teachers set up environments that are tailored to each tutorial situation. But that flexibility turns to tedium when you have to copy that setup on dozens of computers for multiple classes. MacAdministrator 1.6 automates that chore by centralizing the setup process, letting you quickly reorganize the hard disks in a roomful of Macs to suit any situation. The upgrade adds a host of small, incremental improvements over the earlier version (see *Reviews*, December 1995), although it fails to address the absence of built-in report printing.

MacAdministrator consists of a server application containing a central database of computers and users and a client application that locks access at each remote Mac to control who uses that computer, arrange and audit content, and collect usage statistics. Once MacAdministrator is installed on a client computer, the server determines who can access each client and when, what applications they can run, when clients' computers are backed up, and what files are visible to the user. The server also keeps track of page-printing budgets for each user, letting you limit access to expensive printing resources.

MacAdministrator uses a suite of agent applications that run periodically—at system start-up or shutdown, at user log-in or log-out, or at a particular time of day—on client computers. These agents protect various Mac files from access or tampering, mount and unmount disks, reestablish a common setup, back up documents, and audit installed applications and hardware.

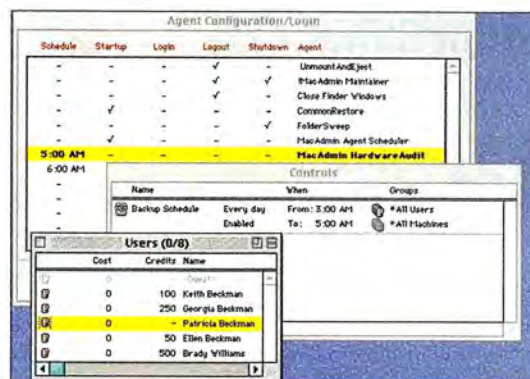
Version 1.6 adds features that improve performance, simplify operation, strengthen security, and add convenience for both users and administrators. All MacAdministrator agents are now PowerPC-native, as is much of the server software, and completely compatible with Mac OS 8 and IP-based AppleShare. Where MacAdministrator 1.0 required a separate log-in for each user, version 1.6 lets you create group log-ins. If a user logs out and back in, MacAdministrator will go through a streamlined log-in process

to avoid delays or the need to reconfigure the Mac.

The new version's security and reliability improvements include the ability to operate up to three servers (to ensure one's always available), block apps launched from Internet browsers, and detect and prevent attempts to circumvent MacAdministrator controls. There is a slew of cosmetic improvements—such as spoken error messages, hot links to online documentation, and the ability to sort lists. These enhancements address all previously reported problems but one: you still can't print reports from within MacAdministrator, but must instead export them to FileMaker Pro or Excel.

Macworld's Buying Advice

Teaching time is precious and money for assistants scarce. MacAdministrator automates the most time-consum-



Agents of Change MacAdministrator's agents help keep remote systems organized the way you want them while collecting useful information on user activity.

ing chores of classroom Mac administration, leaving instructors more time to spend with students.—MEL BECKMAN

RATING: 1/2 **PROS:** Inexpensive; reliable operation; events can be scheduled; comprehensive data collection. **CONS:** Can't print reports directly. **COMPANY:** Hi Resolution Software (508/543-6955, www.hi-resolution.com). **LIST PRICE:** Ten-user pack, \$395.

Are you singin' the
"Mislabeled, Misplaced,
Misunderstood Diskette Blues"
again?

Avery® Diskette Labels (Laser 5196/Ink Jet 8196™)

Brothers and sisters, we hear you! When your disks aren't organized the world can be a very cold place. But all this torment can be avoided. There are preset layouts for Avery® diskette labels in Microsoft® Word, WordPerfect® and LabelPro®. So it's easy to print out labels from your laser or ink jet printer. Take our advice and you'll be singing your favorite Disco hits in no time.

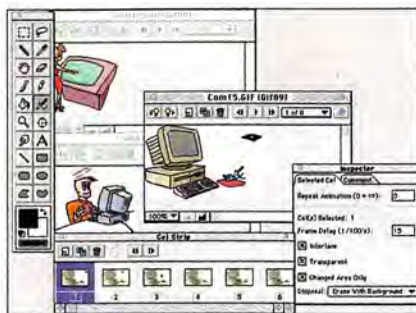
 **AVERY®**
How will you use us today?™
www.avery.com
1-800-477-4404 x167
Call for free sample pack.

WebPainter 2.0

BARE-BONES WEB ANIMATION EDITOR

WEB ANIMATION TOOLS RUN the gamut from the freeware GIFBuilder to professional special-effects packages such as Adobe After Effects. Targeting the lower end of the market, Totally Hip Software's serviceable WebPainter does a decent job as a general-purpose animation editor and creator—as long as you have the artistic talent to create nice-looking images. The new version, 2.0, adds some nice but subtle interface improvements and comes with a collection of animated clip art that's bound to please animation novices.

WebPainter is very easy to set up and use, with a tool set that will be familiar to anyone who has used a basic painting program. You begin by defining the format (such as GIF), bit depth, size, overall rate of playback, and color palette; you can choose from the standard 216 Web-safe colors and the system colors, or you can load external palettes. The result is a multisel animation with basic onion-skinning, though you can see only the frames that appear immediately before and after the current frame; you can't see a user-defined number of cels. A



Devil in the Details WebPainter 2.0's straightforward interface has some fairly sophisticated tools, such as a hexadecimal color calculator and an Inspector palette that makes it easy to specify timings and frame delays in animation files.

bigger drawback is that WebPainter can't create even simple animated effects automatically; everything has to be done by hand.

WebPainter's selection of creative tools is relatively limited, consisting of the requisite paintbrush, pencil, paint-bucket, and finger-smudge tools as well as primitive shapes. It also includes a basic text tool that supports antialiasing but lacks advanced typographical controls such as leading and kerning. The selection tools are also fairly low-end, and the "airbrush" tool is more reminiscent of the outdated, MacPaint-style splatter effect than a true airbrush.

One of WebPainter's advantages over the competition is the variety of file formats it supports: the expected GIF and QuickTime, Totally Hip's proprietary Sizzler (which requires that users download a free browser plug-in), Java, and ActiveX. WebPainter can also import layered Adobe Photoshop documents and place each layer in its own cel, though I encountered some nonreproducible problems when I tried that. WebPainter also includes a utility that lets you simulate various download speeds so you can see how fast the animation appears in the browser window.

Macworld's Buying Advice For the price, WebPainter is a decent basic editor for existing animated GIF files and a serviceable tool for creating animations. If you don't have the artistic talent to make magic from scratch, however, you may want to start with a program that takes a more automated approach.—DAVID BIEDNY

RATING: ★★★ **PROS:** Simple interface; good file-format support; can simulate download speeds; includes sample GIFs. **CONS:** Unreliable support for layered Photoshop files; doesn't have automatic effects and animation generation.

COMPANY: Totally Hip Software (604/685-6525, www.totallyhip.com). **LIST PRICE:** \$89.95.

New! DiskExpress Pro now accelerated for Power Mac and much more!

DOUBLE YOUR DISK SPEED!

Alsoft DiskExpress Pro



Without optimization, your disk performance slows to a crawl. Basic optimization may restore some of your disk's original performance. Only DiskExpress Pro can double your disk speed by providing faster access to the files you actually use!

DiskExpress Pro 3.0 Norton Speed Disk 3.5

	DiskExpress Pro 3.0	Norton Speed Disk 3.5
Makes your Mac faster than new by monitoring actual file usage?	YES	NO
Groups frequently used files together for optimum speed?	YES	NO
Allows you to schedule or immediately perform a complete optimization of all disks without having to restart your Mac?	YES	NO
Verifies accuracy of both read and write activity to ensure data safety during optimization?	YES	NO
Optimizes the busiest of AppleShare™, File Share™, and Internet/Intranet servers without interrupting productivity or taking the server offline?	YES	NO

©1997 Alsoft, Inc. P.O. Box 927 • Spring, Texas 77381-0927. DiskExpress Pro is a registered trademark of Alsoft, Inc. Other product names are trademarks of their respective companies.

www.AlsoftInc.com

THE UTILITY COMPANY

ALSOFT

800-ALSOFT1

Circle 140 on reader service card

MOVIE MOGUL



My daughter's into movies.

Not watching them. Making them. She's amazing. She's takes the video that she's shot and turns it into Quicktime™ movies. It's great. But it sure does use up my hard drive space. **So I bought a SyJet™ drive from SyQuest.** It uses 1.5 gigabyte cartridges and right now you can get **THREE GIGS** of removable hard disk space for only **\$299*** - including hardware. Additional cartridges cost just **\$79 each!** Now she makes movies for almost the price of taking the family to see one!

So take advantage of this offer at your local CompUSA, Computer City, Best Buy, Fry's, Micro Center, J&R Computer World, DataVision, RCS Computer Experience, Creative Computer, Future Shop, Egghead and other authorized SyQuest resellers.



Desktop Engineering

PC Computing

cnet

W

BYTE

W

W



SYQUEST

Explore Your Genius™

www.syquest.com

* SyJet drive purchase includes a 1.5 GB cartridge obtained via mail-in coupon offer. Coupon can be downloaded from www.syquest.com. New low price effective 11/1/97. This additional cartridge offer is valid for qualifying products purchased in USA and Canada by end users only. Not valid with any other offers or rebates. No reproductions of the UPC symbol accepted. Promotion ends on 1/30/98; requests must be postmarked by 2/28/98. Void where prohibited, taxed or restricted by law. SyQuest is not responsible for lost misdirected, or illegible claims. ©1997 SyQuest Technology, Inc. SyQuest is a registered trademark. The SyQuest logo and SyJet™ are trademarks of SyQuest Technology, Inc. All other names are trademarks of their respective companies.

Emblaze WebCharger

GRAPHICS UTILITY DOES VERY LITTLE, SLOWLY AND POORLY

IN THE CONTINUING QUEST TO slim down Web-destined graphics, Geo Publishing has released a program it claims compresses images 400 percent more than JPEG. But aside from the curious fact that Emblaze WebCharger 1.0 outputs JPEG files exclusively, the compression results are nothing special and the limitations downright maddening.

Launching this stand-alone application—which, given its limited utility, really should have been an Adobe Photoshop plug-in—brings up a retro, 1950s-style interface that makes WebCharger difficult to decipher and use. The interface irregularities extend to core image-editing and file-manipulation functionality, such as scrolling, zooming, opening, and saving. For example, there's no magnifying-glass tool; you can zoom only to 50, 100, and 200 percent magnification.

Another significant drawback is that WebCharger can take up to ten times longer than Photoshop to open large PICT files, a downright deadly performance limitation. Compounding the problem, only one image file can be open at any time,



In-Your-Face Interface Emblaze WebCharger's elaborate interface, while interesting to look at, does little to enhance the program's dubious JPEG-compression and -export capabilities.

there's no way to batch-process images, there's no support for Macintosh drag and drop, and the resulting JPEG files can't load progressively (gradually resolve into view on a Web page). Even though the Mac and Windows versions of the application are both delivered on one CD-ROM, users of either platform will be confused by the gratuitous interface conventions.

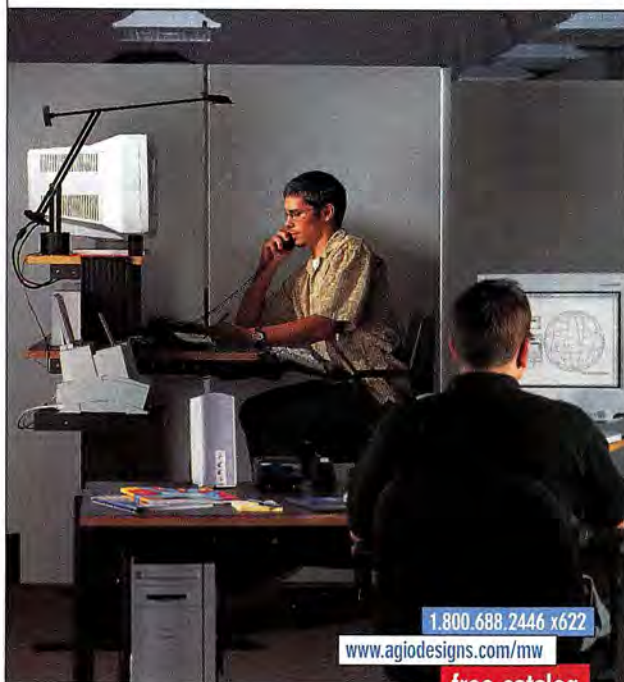
WebCharger does succeed in one of its

goals: you can apply different levels of standard JPEG compression to distinct areas of an image. But although basic selection tools let you choose portions of the image and apply specific compression settings to them, you can't save selection "templates" and apply them to multiple images. Geo also boasts that WebCharger, given a specific set of compression parameters, has the unique ability to predict file size and download time. But a competing and far superior product, Digital Frontiers' \$99 HVS JPEG 2.0 (a Photoshop plug-in), has that capability and offers essentially the same functionality as WebCharger; the only thing missing is the ability to apply different JPEG settings to separate portions of an image.

Macworld's Buying Advice Emblaze WebCharger is simply not worth buying. If you want to create the best-looking JPEGs with maximum flexibility, get HVS JPEG; it offers better, faster tools for about the same price.—DAVID BIEDNY

RATING: ½ **PROS:** Can apply more than one level of compression to an image. **CONS:** Confusing interface; sluggish performance; blurs image detail; no support for batch processing or drag and drop. **COMPANY:** Geo Publishing (818/703-8436, www.emblaze.com). **LIST PRICE:** \$99.95.

work hard and fast. do it with style.



1.800.688.2446 x622

www.agiodesigns.com/mw

free catalog

AGIO DESIGNS™
furniture for the way you do business

DISCOVER A NEW WAY TO SHOP!

Find exciting product offers at the Mac Shopper on



The Essential Macintosh Website.

www.macworld.com/buyers/shframed.htm



Contact your Macworld sales representative for details.

(800) 888-8622



This EPS image was printed on an inkjet **without** StyleScript



This EPS image was printed on an inkjet **with** StyleScript

The difference always raises a lot of eyebrows



Adobe PostScript

If you've been using your inkjet to print EPS clip art and graphics, you've probably seen the "jaggies". StyleScript is an easy to use solution that eliminates jaggies by turning your printer into a genuine Adobe PostScript printer.

StyleScript supports inkjets from Apple, Canon, Epson, and Hewlett-Packard.

For only \$99, you'll be able to print:

- ◆ crisp clean EPS images
- ◆ sharp PostScript fonts at any size
- ◆ improved screen/dither patterns
- ◆ more accurate color

StyleScript turns your inkjet into a genuine Adobe PostScript printer



NOW
supports the
Canon 4550, featuring
tabloid-size printing
and the new
StyleWriters



Call now: 800-865-5501
or come visit us: www.infowave.net

StyleScript®

Circle 32 on reader service card



Myth: The Fallen Lords

A BEAUTIFUL REALM WITH A STEEP LEARNING CURVE

RIDING TO THE RESCUE OF A formulaic, stagnating genre, Myth: The Fallen Lords is poised to revitalize the category of real-time wargames. Set in a world where the forces of light are hard-pressed by armies of the dead, Myth sacrifices some traditional elements of the genre to raise tactical gaming to new heights.

Myth's 25 levels of beautifully rendered 3-D landscapes offer a vast variety of terrain, including barren deserts, murky swamps, and eerie caves. Each landscape poses a unique challenge, from adverse weather conditions to dangerous statuary. Myth's realism isn't limited to the scenery, either: soldiers who die bounce and break according to realistic physics, missile flight is affected by weather, and climbing a hill to reach your enemy is a sure way to die.

All this beauty isn't without flaws. Myth's back story is riddled with holes and inconsistencies, and the cut-scenes between battles are childish and disjointed. Even so, most players won't mind; these weaknesses are limited to garnishing elements that have no effect on game play.

You're offered a range of 16 types of military units, all rendered with stunning graphical detail and equipped with a wide range of capabilities. As in real warfare, you're given a limited number of units for each mission. As a result, Myth's game play is a realistic mixture of scouting, sorties, ambushes, and raids.

Partially due to the game's richness and variety, Myth's learning curve is steep. Since you can zoom and pan your vantage point a full 360 degrees, you have to master many more keys than in similar games. Myth also allows you to organize units into formations and control their facing—a realistic aspect that will thrill wargame fanatics—but these details will likely stun novices.

Once you've mastered its complexity, you'll be rewarded by Myth's network play. Although the game can't generate random maps in network mode—you're limited to a set of ten—Myth's highly addictive network play does offer a variety of games, each requiring a different strategy. In Body Count, for example, you simply slaughter opponents; Last Man on the Hill tests your timing and your ability to conserve lives.



Beautiful Carnage Breaking the wargame mold, Myth: The Fallen Lords offers visually stunning environments as well as realistic tactical challenges.

Macworld's Buying Advice The problems with Myth: The Fallen Lords pale in comparison to the game's stunning graphics, realistic-physics engine, engaging tactical realism, and addictive network play. More than just another strategy game, Myth is a giant step forward for the real-time-wargame genre.—DANIEL MADAR

RATING: ★★★★★ **PROS:** Outstanding tactical game play; great graphics; realistic physical background; entertaining. **CONS:** Interface is difficult to master; animation and story line seem like afterthoughts. **COMPANY:** Bungie Software (312/255-9600, www.bungie.com). **LIST PRICE:** \$49.95.

Shadow Warrior

GOOD 3-D ACTION, CRUMMY JOKES

EVEN FOR TALENTED ARTISTS, sequels are never easy. For every *Godfather: Part II*, there is a swarm of second-generation imitators that pale in comparison to the original. Shadow Warrior certainly isn't terrible, but although it delivers the basic ingredients necessary for a 3-D shoot-'em-up, the final mix is less than inspiring.

Strictly speaking, Shadow Warrior isn't really a sequel. Although the game uses the same first-person engine that powers Duke Nukem 3D: Atomic Edition (see "Great Games," January 1998), Shadow Warrior's designers have built a universe that feels like a mix of *Mortal Kombat* and *Indiana Jones*. As Lo Wang, you battle heavily armed ninjas, gore-throwing ghosts, and fire-breathing guardians . . . yawn. Truth be told, the waves of nasties feel a lot more like pop-up targets than menacing, otherworldly creatures. They're not visually interesting, they're dumb as posts, and—beyond minor differences in armament—there's not much to distinguish one piece of cannon fodder from another.

Lo Wang begins his journey equipped



A Lo Blow Between inane wisecracks, Shadow Warrior Lo Wang embraces the Western martial arts weapon colloquially known as the submachine gun.

with a *katana* (sword) and *shuriken* (ninja throwing stars) but rapidly acquires more deadly armament, ranging from the ever-present Uzi submachine gun up through grenade and rocket launchers. (Thoughtful players may note the irony of possessing the world's deadliest ninja warrior skills and still choosing to drop enemies at 20 yards with a shotgun.) Shadow Warrior's wit emerges when you're allowed to pick up severed heads and hearts of dead monsters and use them as magical weapons; a more liberal use of this type of creativity could have resulted in a much more interesting game.

Duke Nukem fans fell in love with the deadpan running commentary that Duke

volleyed even as all hell broke loose. True, Lo Wang delivers his share of quips, but where Duke's dry repartee provided a welcome Eastwood-esque spice, Wang's is a fountain of adolescent toilet jokes and ancient double entendres delivered in a fake Asian accent. Almost all the humor in Shadow Warrior is racist, sexist, or tasteless, but it's also so banal that it's nearly impossible to be offended. As with most action games, parents should think twice before handing Shadow Warrior over to a young child, but any teenager who's seen an R-rated movie or watched *Beavis and Butt-head* has probably seen and heard worse.

Macworld's Buying Advice Shadow Warrior isn't a bad game, but that's the best compliment I can pay it. If you're a die-hard fan of first-person shooters, you'll find Shadow Warrior a moderately entertaining addition to your collection. Otherwise, though, you should pass. Like so many sequels, Shadow Warrior can't match the magic of the original.—CAMERON CROTTY

RATING: ★★★ **PROS:** Moderately entertaining; interesting premise. **CONS:** Uninspired foes and weaponry; trite (and frequently racist) humor. **COMPANY:** MacSoft (612/577-0631, www.wizworks.com/macsoft). **LIST PRICE:** \$49.99.

The Biggest Difference In The SpectraView Display System Is There Is No Difference.

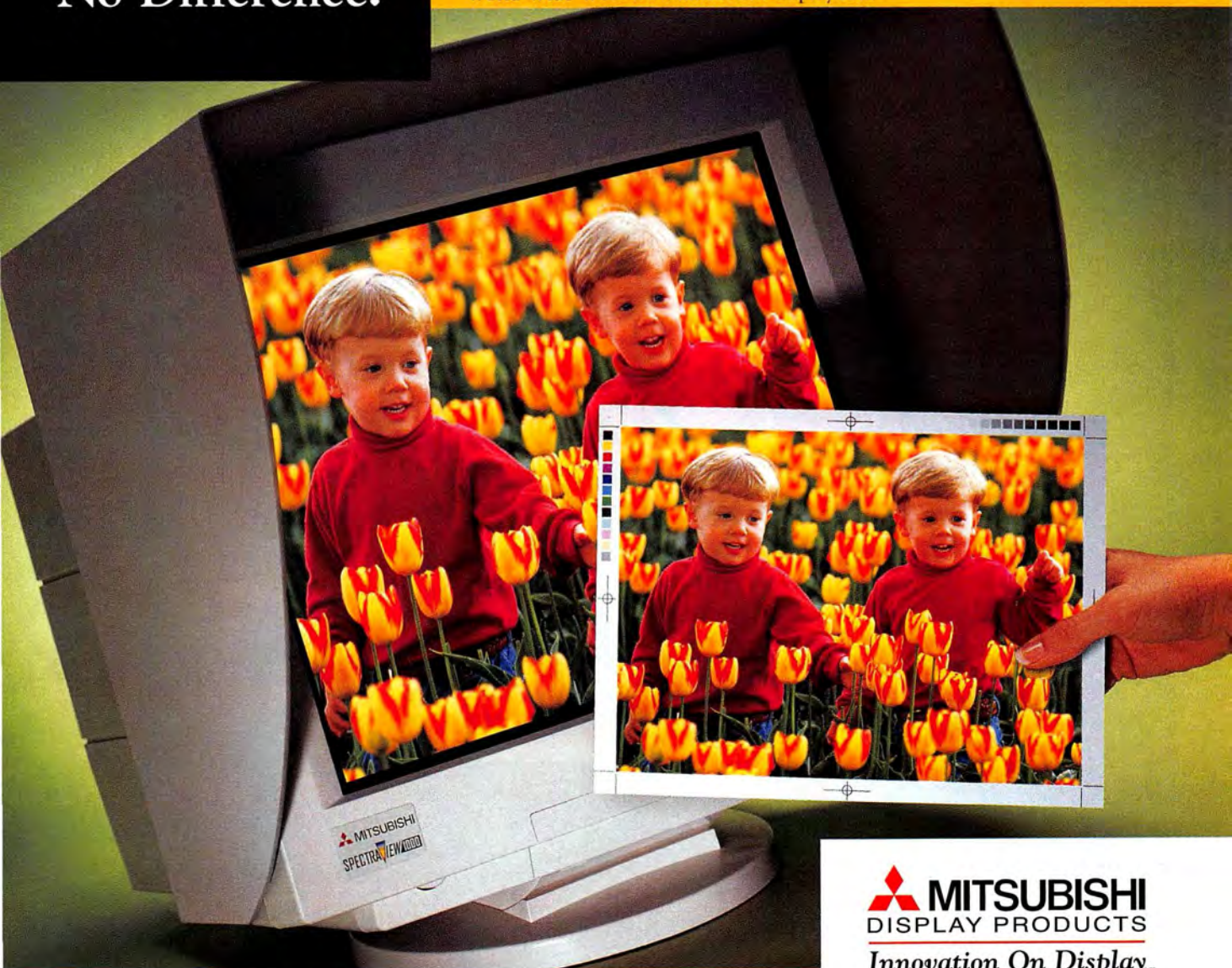
Consistency. It's what every graphics professional wants, but seldom achieves. Until now. The SpectraView 1000 color calibrated display system from Mitsubishi Electronics provides monitor-to-monitor color matching throughout the entire prepress process. Unsurpassed color accuracy results in less time and materials needed to complete a job, which improves your productivity and adds more profit to your bottom line. The SpectraView 1000 combines Mitsubishi's award-winning 21" (19.7" diagonal viewable image) DIAMONDTRON™ CRT display with a precise, high-speed SpectraSensor™

SPECTRAVIEW™
COLOR CALIBRATED DISPLAY SYSTEM



colorimeter and custom software to achieve accurate, reliable, repeatable and consistent color performance. Plus, it's available for either PC or Mac, providing a complete cross-platform display-matching solution. To find out how the SpectraView 1000 can make a major difference in your color-critical applications, contact Mitsubishi Electronics today.

USA: 1-800-843-2515 • Canada: 1-800-387-9630 • Qwikfax: 1-800-937-2094
World Wide Web: www.mitsubishi-display.com



MITSUBISHI
DISPLAY PRODUCTS
Innovation On Displaysm



©1997 Mitsubishi Electronics America, Inc. SpectraView and SpectraSensor are trademarks of Mitsubishi Electronics America, Inc. DIAMONDTRON is a trademark of Mitsubishi Electric Corporation. Microsoft, Windows and the Windows logo are registered trademarks of Microsoft Corporation. Mac and the Mac OS logo are trademarks of Apple Computer, Inc.

Circle 261 on reader service card



NEC

MultiSync A700





A You demand incredible image clarity and vivid color at an affordable price.

A You're obsessed with buying a legendary brand, known for reliability and innovation.

A You've been overheard saying, "Then unbundle it."

Are you a type **A** personality?

A You're impatient with how long it's taking us to tell you the horizontal dot pitch (it's 0.24mm!).

A You're reading this while showering.

MultiSync® A Series monitors from NEC Technologies are an exceptional value for home or office.

Looks like you're a prime candidate for our budget-friendly MultiSync® A Series monitors. Both meet your personal standards for high-resolution, flicker-free images, digital OSM™ on-screen controls, and the security of a three-year limited warranty. Both are also PC and Macintosh® compatible, Plug and Play compatible and Energy Star compliant. There's more to tell, but you probably have to be somewhere.

	MultiSync A500™	MultiSync A700™
CRT/VIS*	15"/13.8"	17"/15.6"
Max. Res.	1280 x 1024 @ 60 Hz	1280 x 1024 @ 65 Hz
Dot Pitch	0.24mm horizontal	0.24mm horizontal

To learn more about the entire line of MultiSync monitors from NEC Technologies, call 1-800-NEC-INFO or visit www.nec.com.
Expect more. Experience more.





Microsoft Repents

Office 98

Makes Up for Past Sins

WHEN IT COMES TO SOFTWARE DESIGN, PARANOIA can be a wonderful thing. Take, for instance, Microsoft and the Mac. Microsoft's 1994 attempts at Mac programs—Word 6, Excel 5, and PowerPoint 4—were so sluggish, awkward, and *Windows-like* that for the first time, upgrading seemed like a genuinely bad idea. Sales slipped dramatically for a time. Microsoft was forced to sell a “downgrade” of Word 5.1 to Word 6.0 users. Many—including *Macworld*—refused to install the copies of Word 6 and Excel 5 they'd bought and instead continued using the older versions. After this debacle, fear crept into Microsoft's heart. No one knows the exact cause: maybe Bill Gates can't stand rejection in any market; maybe

Microsoft realized that it couldn't take \$400 million in annual Mac-software sales for granted.

Whatever the reason, Microsoft began to throw enormous muscle, money, and imagination at the next generation of Macintosh software—Office 98. The company also made a tough but critical decision: to win back the gun-shy Mac community, Mac Office would contain genuine *Macintosh* programs, even if that meant adding elegance and features that Windows Office 97 lacks.

Macworld tracked down a prerelease version of Office 98 to help you prepare for when it ships early this spring (800/426-9400, www.microsoft.com; pricing unavailable at press time). And if what we've seen is any indication, Microsoft's paranoia paid off. Word 98, Excel 98, PowerPoint 98, and the new Outlook Express (for e-mail) are truly *Mac* products, complete with QuickTime playback, WYSIWYG font and style-sheet menus, sophisticated Mac-inTalk speech control, drag-and-drop

by David Pogue

You're Not in Word 6 Anymore

Accessible Outlines

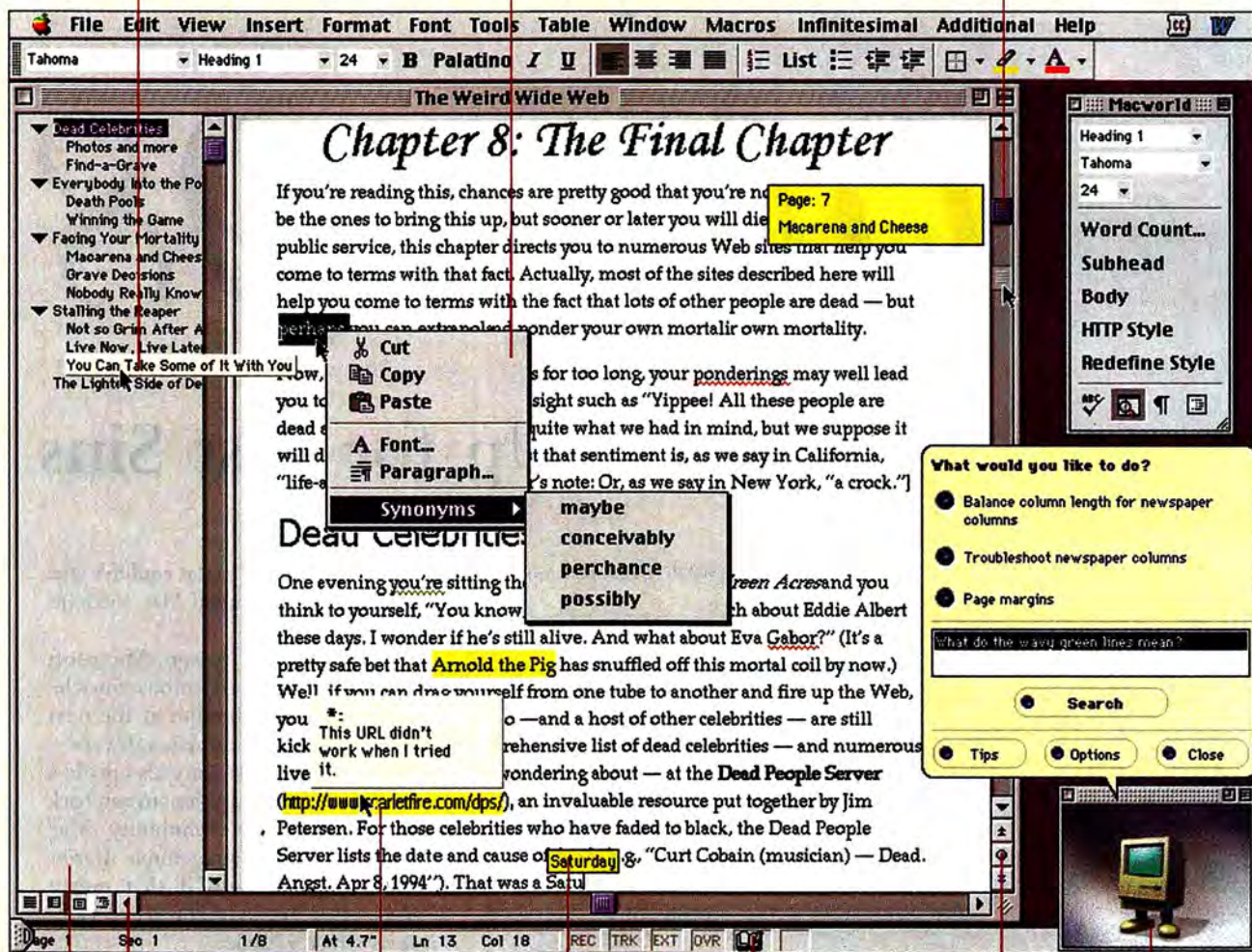
The new Document Map lets you navigate your outline and your document simultaneously.

One-Click Thesaurus

The control key is all-powerful in Office 98. Control-click on a word to get a pop-up menu with synonyms, even if you're not using Mac OS 8.

Smart Scrolling

The scroll bar "thumb" tells you what page and heading you'll be at when you release the mouse.



Variable Views

These icons let you switch among Word's various views, such as Outline and Master Document.

Intelligent Automation

As you type, Word compares your text with AutoText possibilities (when you type Sat, for example, it guesses Saturday). If you like what it's suggesting, press return; if not, keep typing.

Better Browsing

The new Object Browser controls let you scroll through your document by objects (page numbers, graphics, and so on). Click on the center knob to select the type of object; click on the double arrows to jump to the next or previous one.

The Mac Look

Office 98 applications follow the specifications of Apple's "platinum" appearance religiously, from the shape of checkmarks to the exact shades of gray.

Easy Annotation

Yellow highlighting indicates a reviewer's comments. Just place your cursor over the highlighting to read the note.

Quick Corrections

Red or green wavy lines mean Word has found spelling or grammar errors in your work. Control-click to see Word's replacement suggestions—or click on this tiny book icon to jump to the next problem.

Humorous Help

When you need help, click on the Office Assistant and type your question. A yellow lightbulb means that the Assistant has observed you flailing; click on it for a gentle behavior correction.

installation, and an elegant design. Microsoft learned a valuable lesson from the last version of Office: truly excellent software must be hand-tailored to each operating system's strengths.

Only one vestige of the Bad Old Days remains: these programs are bigger memory hogs than ever. If you opt for graphics and Internet features, Word demands 9MB; Excel, 6MB; PowerPoint, 12MB. (A Power Mac and CD-ROM drive are also required.) But this time, you can see where every kilobyte of that RAM is going—the list of new, intelligent, time-saving, and even *witty* features is prodigious. Office 98 is still bloatware, but it's no longer grim, mediocre bloatware; some of the new stuff is so beautifully done that you may actually call people over to your screen to show them.

As this guide to the new Office will reveal, the fun just went out of resenting Microsoft.

An Angelic Upgrade

Installing Office 98 is this simple: drag the approximately 80MB Office 98 folder from the CD onto your hard disk. Your new programs are ready to run.

You're probably wondering how installation can be that easy. What about extensions? What about installing only selected applications?

Incredible as it may sound, Office 98 requires *no extensions*. The new Word, Excel, and PowerPoint run even if you've held the shift key down at start-up. The first time you run one of them, however, a special program called First Run launches itself and puts several *shared libraries*—patches of code that can be shared by several of the Office programs—into your Extensions folder. These libraries don't use any RAM at start-up, don't add to the Mac's start-up time, and don't cause start-up conflicts. In fact, most of them are stashed in a Microsoft Library folder; the six that remain in your Extensions folder are required by other programs, such as Microsoft Works and Internet Explorer, and Adobe PageMaker.

If you move or delete any of these library files, the next time you run an Office 98 program, the First Run program launches itself and replaces them. Never again will you be told, "The application 'Word' could not be opened because 'GeekyOLEMicrosoftLib' could not be found." This feature is what Microsoft's ads mean by "self-repairing programs" (a feature not available in Office 97 for Windows).

Be aware that the drag-and-drop installation gives you all three major Office programs (Word, Excel, and PowerPoint). If you'd like only one or two, use the traditional installer also on the CD.

Tip: After installation, don't move the Word, Excel, or PowerPoint icons out of their original Office 98 folder or they won't run. If you'd like to move these



icons to more-useful positions on your desktop, make aliases of them instead.

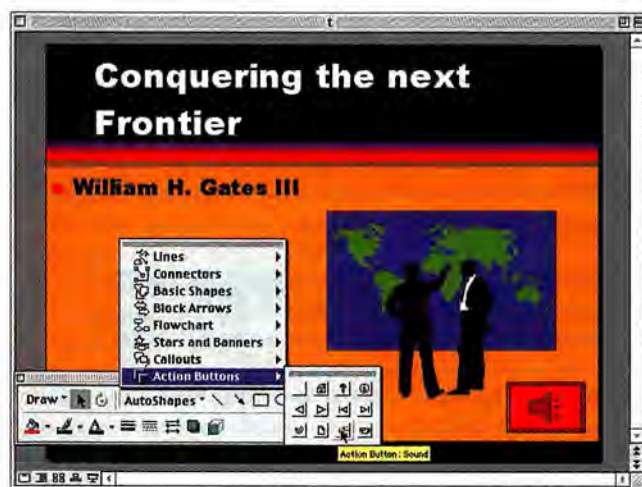
Converting the Masses

If your colleagues use older versions of the Microsoft programs, you have three strategies for sharing. First, your friends could install Word 98 and PowerPoint 98 converters (available from Microsoft's

Web site), which allow you to open newer documents in older programs. (Be careful with *embedded* objects, such as an Excel 98 spreadsheet within a Word document; these components don't get converted.)

Second, you could save outgoing documents in the older format. In fact, you *must* use this method to give an Excel 98 document to a user with an older version of Excel, because there's no Excel translator for older versions.

Also, a new Office 98 feature lets you save and keep *all* your documents in older file formats. No



PowerPoint Embraces Easier Graphics PowerPoint now offers *AutoShapes*—resizable, movable graphic elements you can drop onto your slides. Some AutoShapes, such as the Action buttons shown here, can change slides, play a sound, launch a program, or go to an Internet address.

longer do you have to waste time clicking on Save As and repeatedly assuring the program that you know what you're doing. Choose Preferences from the Tools menu, click on the Save tab, and choose the older file format you prefer from the Save File As Type pop-up menu. Your documents will be saved and retained in the older file format. You'll be warned—only the first time you save—that certain high-tech Office 98 features will be lost in the translation.

Immediate Affirmations

The greatest joy in using Office 98 programs comes in the first six seconds. That's about how long the prerelease Word, Excel, and PowerPoint each took

to launch on my 150MHz Power Mac—yes, seconds, not minutes. On a 266MHz Power Mac G3, all three launched in five seconds the first time and *three* seconds the second time.

The next surprise is the interface (see the sidebar "You're Not in Word 6 Any-more"). The Mac OS 8 "platinum" look greets you every step of the way, right down to the shape of the dialog-box tabs, the shade of gray, and the window-shade box in the floating palettes. Such klutzy Word 6 "innovations" as pop-up-menu buttons have, mercifully, been abandoned, and the OK and Cancel buttons are finally *outside* the panels of tabbed dialog boxes, where they belong.

You'll also notice the Office Assistant: an animated Mac Plus (Max) at the corner of your screen who dances, snores, and rearranges himself like a Rubik's Cube as you work. This character is more than the mutant son of Bob, Microsoft's ill-fated kiddy character for Windows; he's a central message and help desk. Click on the character to summon the "What would you like to do?" box, where you can type plain-English phrases such as "make a Web page" to fire up Microsoft's help screen. This beefed-up help-getting mechanism is a good thing, as Office

Workbook1					
	A	B	C	D	E
1	1998 Projected Royalties				
2					
3					
4					
5	Title	Royalties	Commission	Taxes	Net
6	7 Steps to a Better You	\$ 4,512.00	\$ 676.80	\$ 1,759.68	$\text{Royalties} - \text{Commission} - \text{Taxes}$
7	Anderson Lee and Me	\$ 458.00	\$ 68.40	\$ 177.84	209.76
8	Night of the Koala	\$ 78.00	\$ 11.70	\$ 30.42	35.88
9	Jennifer's Little Secret	\$ 1,325.00	\$ 198.75	\$ 516.75	609.50

Enlightened Excel Formulas Excel 98 is smart enough to know what you mean when you write a formula simply as "Royalties – Commissions – Taxes = Net." Instead of making you define ranges, the program looks at what you've entered as your column and row headings. (Now you don't even have to know what "defining ranges" means.)

[illegible]

Excel Breaks with Tradition Gone are the days of guessing which part of your spreadsheet might print. Excel 98's Page Break Preview lets you drag thick blue lines to redefine where the edges of your printout will be. You can even edit cells in this preview.



98 doesn't come with a complete printed manual—just a task-based guidebook.

If this happy cartoon Assistant is wrecking the mood for the obituary you're trying to write, by all means close its window. You'll often get faster answers with the Contents and Index command in the Help menu anyway. However, if you become fond of the little guy,

use the installer in the Value Pack folder on your Office CD to try out the 13 additional characters. The less animated ones (Will) minimize distraction; others (Robot, Genius, Max) perform extra antics when you use the Find, Help, Save, Preferences, and Versioning commands.

Tip: If you decide to keep the Office Assistant around, don't let its window overlap your document, otherwise you'll experience a drop in scrolling speed.

Joining the Congregation

Office 98 offers plenty of goodies for the solo practitioner. But if your documents are regularly shared with others, you may find the new programs irresistible.

Although the last version of Office let you insert editorial comments into a document, figuring out how to actually use this feature required a hunt through the manual. Now, adding a comment in each program is as simple as a tool-bar click; annotation adds yellow highlighting in Word, a red cell corner in Excel, or a yellow sticky note in PowerPoint.

To read these notes, just hold your cursor over the highlighted area and the comment pops up in a balloon, complete with the name of the annotator. The Reviewing tool bar lets you jump directly to the next comment, even if it's many pages away, without having to scroll and scan for notes.

If you're of the school that says, "A masterpiece isn't written—it's rewritten," then you'll find Word's ingenious new Versions command to be worth 50 times its weight in disk space. This feature lets you keep all drafts of your work in a single, compact document. Internally, Word stores only the differences between each edition. As you complete each draft, you can take a "snapshot" of the document in its current state. Jumping back to a previous draft is as easy as selecting it from a list.

Tip: To spin off a particular version as a stand-alone file, view it on the screen and use the Save As command.

PowerPoint's Custom Shows command is similarly useful. If you, like most slide-show users, recycle elements of your presentations in subsequent shows, now you don't have to name and save each version separately. The Custom Shows feature lets you rearrange your elements into unlimited show variations within the original file, taking up no

additional space on the disk.

Even Excel is more collaboration-friendly. Color-coding helps you track changes made by different users. This is particularly handy since now you can edit a spreadsheet simultaneously with other networked users, even if you're using a Mac and they're using Windows PCs. You and your co-workers can even edit the same cell at the same time, making simultaneous "what-if" work possible. Only when you try to save the document does Excel ask whose change you want to make permanent.

Tip: Feature-hobbling is a side effect of sharing a spreadsheet, so don't be alarmed if charting and some other features are suddenly disabled.

Reborn for the Web

If there's one thing Microsoft wants to control more than the Macintosh marketplace, it's the Internet. Office 98 seethes with Internet features. For example, Word is now a basic Web browser, capable of accessing the Net and opening simple Web pages that have been downloaded to your hard disk. (There's even a tool bar with Next, Previous, Home, and Favorites buttons.) And Excel—if you fuss long enough with the configuration settings—can download and graph data directly from Web pages.

Each program offers an Insert Hyperlink command that turns selected text or graphics into a live hyperlink. When clicked, this link can open a Web page, jump to a specified spot in the document, open any file on your hard disk or network, or play a QuickTime movie or sound. This feature throws open the doors to some compelling possibilities. You can now create a mini-Web of your Word documents, click on a link in Excel to open a supporting document, build a live table of contents in your dissertation, create interactive training courses ("Click here to view the movie"), and so on.

Not all of the new Internet features are equally successful. For example, whenever you type a Web or e-mail address, it automatically becomes a blue, underlined, active hyperlink. There are plenty of reasons to turn this AutoCorrect feature off. If you're creating a document designed to be printed, the blue underlining is just a distraction; furthermore, the hyperlinks are nearly impossible to edit, since clicking on them opens the link.

Tip: If you do manage to edit a link, correcting a typo in the visible, underlined link name *doesn't* correct the underlying HTML code. You must delete the link completely and start over.

The big three Office programs can also save any document as an HTML file ready for the Web. You might suppose that PowerPoint, with its master pages, floating graphics palettes, and navigation buttons,



would be the ideal Web-page maker. But by default, PowerPoint exports each page as a full-screen, slow-to-download GIF file, rendering the feature almost useless.

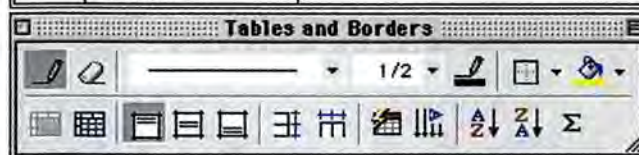
Deep in PowerPoint's "Save as HTML" wizard, there *is* an option for creating text-only Web pages. But why bother? Design your basic Web pages in Word instead. Its

hyperlinks, self-bulleted lists, gorgeous table formatting, built-in graphics tools (including a simple image editor for adjusting photos), page borders, and special text effects make it ideal. With the new Background command, you can even insert a photo or tiled texture—marble, wood grain, and so on—behind your text to create full-screen background images.

You also get two Net-only programs on the Office CD: Internet Explorer 4.0 and Outlook Express, a new e-mail and newsgroup-reading program. (Both are available for free from Microsoft's Web site.) Outlook Express is a stripped-down relative of Outlook, the calendar and address-book manager that comes with Office for Windows. Like Qualcomm's Eudora and Claris Emailer, Outlook Express downloads messages in one fell swoop, filtering out certain messages if you wish and offering shortcuts for replying. It has several attractive features—for example, it reads and sends mail in a long list of formats, such as HTML with fonts, colors, and pictures (Emailer can't do that). And Outlook's three-pane interface keeps your mail

Microsoft Jokes, 1994-1997

1994	Office 4.2 released	First gripes about size and complexity.
1996	Office 97 for Windows announced	First jokes on Internet. "How many Microsoft programmers does it take to change a light bulb? None — they declare darkness to be the standard."
1997	Office 98 for Mac announced	Internet jokes are now full-blown; mailing lists are common.
1998	Office 98 for Mac released	-----



Word Erases Table Troubles Forget futzing with odd options to customize a table—nothing's more fun than simply *drawing* the table on screen. Drag diagonally to define the table's boundaries, and then use the pencil tool or eraser to put the straight lines exactly where you want them. The tool bar helps you with coloring and other details.

Sin and Redemption

Microsoft claims that in developing Office 98 it spent thousands of hours studying Mac people and programs—all in an effort to avoid the Windows-esque mishmash of Word 6, Excel 5, and PowerPoint 4. Has Microsoft righted

the wrongs of Office 4.2? Here's a report card. Features that have been fixed are in roman type; those that still need work are in *gray italics*.

Office 4.2 sin

Office 98: Redeemed or *still guilty?*

Mac-ignorant.

Supports and even extends Apple technologies and Mac-friendly features, such as drag and drop among programs, speech, QuickTime playback, balloon help, contextual menus, and more.

Slow as molasses.

Highly optimized; all three of our prerelease programs launched in less than five seconds on a fast Mac.

Requires 11 extensions at start-up.

Requires zero extensions at start-up.

Ugly; looks like Windows.

Mac OS 8 platinum standard, right down to the shapes of checkmarks.

Guzzles RAM.

Guzzles more RAM than ever.

Spelling checker chokes on Internet addresses.

Spelling checker ignores Internet addresses and already knows the names of every Fortune 1000 company on Internet addresses as well as the names of U.S. towns, common people and country names, and computer terms.

Renaming your hard disk stops Office cold.

No problem with changing disk names—but *now Office programs won't run if you drag their icons out of the original folder.*

A nightmare getting tables right.

New draw it! feature makes customizing tables easy: simply *draw* column and row lines where you want them, using an auto-straightening pencil tool and an eraser.

Hassle installing and removing programs.

Drag-and-drop installation, with no restart required; new Remove Office applet deletes all traces from your hard disk (except documents and templates).

Windows users get more software for same price.

Windows users still get more, including a full-featured version of Outlook and a database program. Also for Windows only: Small Business and Professional editions with extra bundled software. Office 98's pricing was undetermined at press time.

Hard to figure out how to read annotations.

Annotated material is highlighted in color. Simply rest cursor over it to see the notes in a pop-up balloon.

No multiple undo in Excel and PowerPoint.

Both programs now have a pop-up menu listing the last 16 actions; you can undo as many as desired in one step.

Excel cells and rows too limited.

You can type 32,000 characters into each cell (up from 255) and have 65,535 rows per sheet (up from 16,384).

Takes too many steps to insert AutoText (boilerplate) entries.

As you begin typing one of your preprogrammed AutoText entries, a pop-up balloon appears; press return to insert the full entry.

Wizards are disorienting.

A subway map appears in wizard dialog boxes, so you can see where you are in the process (and jump to other steps).

No fun.

Sounds and animations perk up boring work sessions; shimmering animated text gives dull memos the illusion of liveliness; talking, dancing, animated Office Assistant characters are infinitely more charming than Bill Gates.

list and an open message available simultaneously. Outlook can't get mail from America Online, as EMailer can, nor does it let you create folders for filing your read mail, as EMailer and Eudora both do.

The Devil's in the Details

The big-ticket features in Office 98 may sell the upgrades. But what'll keep you happy long after the sale are the day-to-day features, the tiny touches that save you a few seconds here and there.

In Word, for example, the Save As dialog box proposes the first line of the document (such as "Chapter 34") instead of "Untitled" as the name of the file; a warning pops up when you open a document that may contain a macro virus (the program then offers to open the file without the macros); and the spelling-checker window shows the questionable word in bold, red, and in context.

AutoCorrect, meanwhile, has been smartened up enough to be genuinely useful. It not only corrects common misspellings as you type but also turns (c) and 1st into © and 1st, respectively; capitalizes sentences; correctly curls the apostrophe in phrases such as *the summer of '67*; corrects gaffes such as *int be mood* and *your a star*; and turns :) and :(into ☺ and ☹, respectively. (All right, *most* of the AutoCorrections are useful.)

Tip: If AutoCorrect makes a "correction" you don't like, press ⌘-Z to restore your original.

Excel's similar AutoCorrect feature offers to fix the 15 most common formula errors: extra spaces, mismatched quotes, transposed cell names (such as 1A), and so on. AutoComplete can finish an entry by looking at what you've typed earlier in the same column, much as Intuit's Quicken does; if you don't like its suggestion, simply type over it.

The improvements made to PowerPoint aren't as dramatic, but they're similarly oriented toward real-world users. Microsoft's goosed-up graphics tools—more clip art, more text effects, better drawing and alignment tools—are useful in all three programs, but PowerPoint benefits the most. (There are also many new text-animation and sound effects, but most are too gaudy for grown-ups.) Smallest but nicest of all: while you're writing your outline, a constantly updating miniature picture of the actual slide hovers nearby so that you don't have to keep switching between views just to see how your slide-in-progress is going to look.

The Last Word

To atone for the dismal mistakes of Office 4.2, Microsoft says that it reviewed 5,500 Web-survey responses and dedicated 130 programmers and 25,000 hours of research to create Office 98. One

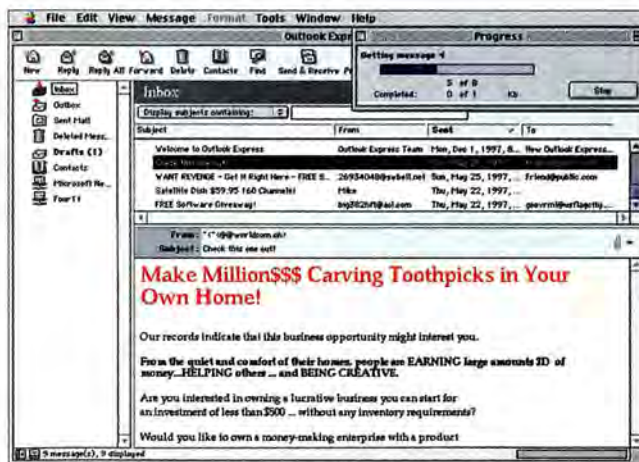


thing is clear: the company pursued every kind of Mac user with equal vigor. For the network administrator, Office 98 offers simple installation; a much-improved help system; and, as in the last version, file formats identical to those of Windows Office. For the power user, the program

offers shareable spreadsheets, rich revision tracking and commenting, reshapable text wrap around graphics, enhanced and automated graphics tools, deep ties to the Internet, and improved control over large documents.

But what if you're the kind of person who believes that a word processor is for writing, a spreadsheet is for numbers, and a presentation program is for slide shows? What if you have no intention of writing a book in Word, don't need Excel to query Oracle databases, and have no intention of turning your slide show into a Web site?

This time around, Microsoft reserved its most inspired efforts for you. Office 98's best features are the details: the tiny time-savers, the quiet helping hands, and the intelligent automation. After three years of selling us big, uninspired glop,



Outlook Fairly Uplifting The good news about Microsoft's new e-mail servant is that the interface is sleek, flexible, and attractive, and the program can read colorful, graphics-rich HTML mail. The bad news: Outlook Express can't compress files you've attached to your messages, and most e-mail is junk mail anyway.

Microsoft has turned Office 98 into a gift-wrapped digital apology. If the new focus on elegance, efficiency, and the Macintosh way are any indication, Microsoft really does know where we want to go today: home early. **m**

Contributing editor DAVID POGUE knows both the Mac and Microsoft very well, having authored *Macs for Dummies*, fifth edition (IDG Books Worldwide, 1997), and *The Microsloth Joke Book* (Berkley, 1997).

WE'VE GOT 10 YEARS B 24 HOURS BEH



Featured with additional paper trays

Elite XL 616

- 600 x 600 dpi resolution
- 16 pages per minute
- 1 year Platinum Exchange Warranty*
- Maximum print area: 11.69" x 20"
- Ledger, letter, legal, A4, envelope
- 250 sheet Universal Tray
- PostScript® Level 2 compatible, PCL 5
- 80 PostScript fonts, 15 PCL fonts
- 8MB RAM expandable to 64MB

Connectivity:

- Ethernet® (10 BaseT, 10 Base2)
- EtherTalk® TCP/IP
- Parallel, LocalTalk®, RS422 Serial

Extra Universal Tray Add \$129

Second Paper Feeder** Add \$319
(Includes 250 sheet Universal Tray)

Second Paper Feeder** Add \$419
(Includes 500 sheet Letter Tray)

Extra 8MB memory*** Add \$89

Platinum Exchange Warranty Program

Additional year Add \$219

Two additional years Add \$330

Three additional years Add \$468

\$2199

Business Lease: \$79 month/36 month lease

BACKED BY GCC'S EXCLUSIVE PLATINUM EXCHANGE™ PROGRAM

HIND OUR TECHNOLOGY. D OUR SERVICE.

GCC Technologies® has spent the last 10 years refining printer technology for high-performance graphic arts printers. Now, GCC applies all of that knowledge and experience to our new line of business printers. A line of business printers that gives you the quality, reliability, and value your business demands. Whether you need camera-ready 1200 dpi resolution or large-format (11" x 17") output, or just about anything in between, there's a GCC Elite that's right for you and your business.

We have so much faith in the performance and reliability of our GCC printers that each one comes with our exclusive Platinum Exchange Program*. If our technical support people cannot walk you through a fix over the telephone, we'll ship you a replacement GCC printer by the next business day. That's right, the next business day!

Purchase a new GCC business printer with Platinum Exchange and see for yourself what 10 years of printer experience can do for your business.

Elite XL 608 LC

- 600 x 600 dpi resolution
- 8 pages per minute
- 1 year Platinum Exchange Warranty*
- Maximum print area: 11" x 17"
- Ledger, letter, legal, A4, envelope
- 250 sheet Universal Tray
- PostScript Level 2 compatible, PCL 5
- 80 PostScript fonts, 15 PCL fonts
- 8MB RAM expandable to 64MB

Connectivity:

- Ethernet (10 BaseT, 10 Base2)
- EtherTalk, TCP/IP
- Parallel, LocalTalk, RS422 Serial

Extra Universal Tray	Add \$129
Second Paper Feeder** (Includes 250 sheet Universal Tray)	Add \$319
Second Paper Feeder** (Includes 500 sheet Letter Tray)	Add \$419
Extra 8MB memory***	Add \$89

Platinum Exchange Warranty Program

Additional year	Add \$179
Two additional years	Add \$270
Three additional years	Add \$383

\$1799

Business Lease: \$65 month/36 month lease

Elite 1212

- 1200 x 1200 dpi resolution
- 12 pages per minute
- 1 year Platinum Exchange Warranty*
- Maximum print area: 8.5" x 14"
- Letter, legal, A4, envelope
- 250 sheet Universal Tray
- PostScript Level 2 compatible, PCL 5
- 80 PostScript fonts, 15 PCL fonts
- 8MB RAM expandable to 64MB

Connectivity:

- Ethernet (10 BaseT, 10 Base2)
- EtherTalk, TCP/IP
- Parallel, LocalTalk, RS422 Serial

Extra Universal Tray	Add \$129
Second Paper Feeder** (Includes 250 sheet Universal Tray)	Add \$399
Envelope Cassette	Add \$129
Extra 8MB memory***	Add \$89

Platinum Exchange Warranty Program

Additional year	Add \$139
Two additional years	Add \$210
Three additional years	Add \$298

\$1399

Business Lease: \$50 month/36 month lease

Service. Satisfaction. Guaranteed.

► Platinum Exchange.

Every GCC printer purchased direct is backed by our exclusive Platinum Exchange Program. If anytime during the warranty period a printer problem can't be resolved through GCC Technical Support, we'll send you a replacement printer[†] by the next business day. No downtime while waiting for repairs.

► 30-day money back guarantee.

Every printer and toner cartridge is fully backed by our unconditional, no-questions asked, 30-day money back guarantee.

► One full-year warranty.

Every GCC printer is protected by a minimum one year parts and labor warranty. Yearly extensions are available.

► FREE unlimited technical support throughout the warranty period.

GCC Technologies is on call for you at 781-276-8620, Monday through Friday, 9 AM to 8 PM (et); Saturday, 10 AM to 4 PM (et) or by EMail: support@gcctech.com.

[†] Shipping and handling will be reimbursed only if product is defective.



To order, Toll Free

1-800-422-7777

Mon-Fri 9 AM to 8 PM (Eastern Standard Time)
Sat 10 AM to 4 PM (Eastern Standard Time)

www.gcctech.com

Circle 43 on reader service card

Keycode 803MWC

*Platinum Exchange included for one year. Extended options available. Some restrictions may apply. Call for details.

**The Elite XL 608 LC supports one optional paper feeder. The Elite XL 616 supports two additional paper feeders.

***Please call for pricing on additional memory configurations.

GCC Technologies is a registered trademark of GCC Technologies, Inc. Elite 1212, Elite XL 608 LC, Elite XL 616, and Platinum Exchange are trademarks of GCC Technologies, Inc. All other trademarks or registered trademarks are trademarks of their respective companies.

T H E M A C ' S

Brightest STARS

PRESENTING THE *1998* EDITORS' CHOICE AWARDS

IT WAS AN EVENTFUL YEAR FOR APPLE Computer and the Macintosh: Gil Amelio stepped down, Steve Jobs stepped in, and clones were shown the door. It was also a year of change for us: *Macworld* and *MacUser* merged into a single magazine.

In the past, *MacUser* recognized the best Mac hardware and software with the Editors' Choice Awards, while *Macworld* bestowed its honors as the World Class Awards. So which would it be this time? We carefully weighed each option and consulted the greatest minds in the Macintosh market. Then, after much consideration, we flipped a coin. The Eddy Awards won.

So what does it take to be the Editors' Choice? No coin flips here: as always, we based our picks on the expert opinions of our editors and contributors. Whether we were looking at a business product, a tool for print publishers, software for multimedia and Web designers, or a development environment for a programmer, we made sure that the products we chose offered value, usefulness, and innovation.

Above all, we sought products that embody the creative spirit that defines the Macintosh.

To be eligible for Eddy consideration, the products had to have been released in the past year. (The old World Class Awards were open to all Macintosh hardware and software currently shipping.)

Not that the World Class Awards have gone away. They've been fashioned into a set of special awards recognizing the people, products, and technologies that have had the greatest impact on the Macintosh. And we've combined forces with the editors of *MacTech* magazine to give four awards to the year's best Macintosh development tools.

These are challenging times for Apple Computer and the millions of Macintosh faithful. But as you can see in these pages, hardware and software developers are still delivering the kinds of innovative products that help make the Mac a unique computing experience.

Senior editor STEPHEN BEALE and senior associate editor JASON SNELL managed this year's awards.



Business Necessities



THE BEST PRODUCTS TO GET THE JOB DONE

PROFESSIONAL SYSTEM

WINNER: A dream come true for power users, the Umax SuperMac S900Base with Umax Edition Maxpowr Pro+ (\$4,090; 510/226-6886, www.supermac.com) holds its own against the fastest Windows NT workstations. Extra expansion slot and drive bays, along with Newer Technology's PowerPC 750 CPU upgrade, make this a winner for the most-demanding Macintosh users.

RUNNERS-UP: Apple's Macintosh PowerBook G3/233 (\$5,699; 408/996-1010, www.apple.com) is the fastest laptop on the planet. Power Computing's PowerTower Pro 250 (discontinued) gives you 128MB of RAM on top of an already loaded system.

BUSINESS PRINTER

WINNER: The QMS magicolor 2 CX (\$3,500; 334/633-4300, www.qms.com) speeds along at 4 pages per minute in full color—16 ppm in black and white—providing unprecedented performance in an under-\$4,000 color laser printer.

RUNNERS-UP: Among other color laser printers, the Xerox DocuPrint C55mp (\$4,995; 203/968-3572, www.xerox.com) and Tektronix Phaser 560 (\$5,495; 503/682-7377, www.tek.com) are solid choices.

BUSINESS-PRODUCTIVITY TOOL

WINNER: It doesn't add much in the way of new database features, but Claris's FileMaker Pro 4.0 (\$199; 408/727-8227, www.claris.com) is a giant leap forward for small businesses and home users who want an easy way to publish on the Web.

RUNNERS-UP: ClarisWorks Office (\$100; 408/727-8227, www.claris.com) adds Web publishing features to the popular integrated productivity package. Investment Intelligence Systems Group's Wingz 2.1.1 (\$399; 913/663-4472, www.wingz.com) is a powerful spreadsheet that offers easy connection to corporate databases.

DATA-PRESENTATION TOOL

WINNER: Data Description's Data Desk 6.0 Plus (\$795; 607/257-1000, www.datadesk.com) adds even more speed to the fastest statistics program for the Mac. You also get new training aids in the form of ActiveStats and feature parity with the Windows 95/NT versions.

RUNNERS-UP: Benjamin/Cummings Science's ActiveStats 1.0 (\$30; 617/944-2630, www.awl.com/bc) is an inexpensive statistics training aid that includes a student version of Data Desk. Adrenaline Software's Numbers & Charts 1.0.2 (\$150; 418/658-9909, www.adrenaline.ca) is a fast and flashy spreadsheet and charting tool based on Apple's ill-fated OpenDoc technology.

PROJECTOR

WINNER: The Epson PowerLite 5000 (\$9,399; 310/782-0770, www.epson.com) lives up to its name by offering excellent image and sound quality in a small, well-designed package.

RUNNERS-UP: Philips's Proscreen 4600 Endurance (\$7,999; 800/504-9978, www.philips.com) and In Focus's LitePro 720 (\$8,499; 503/685-8888, www.infocus.com) are compact projectors that produce great images.

COMMUNICATION HARDWARE

WINNER: Sonic Systems' QuickStream Pro (\$999; 408/736-1900, www.sonic.com) is a remote-access serv-

er that supports Internet protocols and AppleTalk. It offers a cost-effective way to bring telecommuting capabilities to small workgroups.

RUNNERS-UP: The Whistle Communications InterJet (\$1,995 to \$3,495; 650/577-7000, www.whistle.com) is an easy-to-use, toaster-size box that connects your LAN to the Internet. Big Island Communications' YoYo Pro (\$395; 650/237-0350, www.big-island.com) brings caller ID and ISDN capabilities to your Mac.

NETWORKING SOFTWARE

WINNER: Neon Software's CyberGauge 2.0 (\$139 to \$695; 510/283-9771, www.neon.com) is the only low-entry-cost, low-effort network-bandwidth-monitoring program for the Macintosh. It features an easy and attractive interface.

RUNNERS-UP: Miramar Systems' PC MacLAN 6.1 (\$161; 805/966-2432, www.miramarsys.com) helps bridge the platform gap by connecting PCs to Mac networks and vice versa. Vicom Technology's SoftRouter 4.0 (\$199; 415/691-9520, www.vicomtech.com) lets workgroups get on the Net by sharing one TCP/IP address.

SCIENCE/ENGINEERING TOOL

WINNER: Wolfram Research's Mathematica 3.0 (\$1,300; 217/398-0700, www.wolfram.com) remains top dog among math-notation programs.

RUNNERS-UP: Bentley Systems' MicroStation 95 (\$3,995; 610/458-5000, www.bentley.com) and Diehl Graphsoft's MiniCAD 7.0.1 (\$595; 410/290-5114, www.diehlgraphsoft.com) lead the way among Mac-based CAD packages.

World Class Awards

SOFTWARE PRODUCT OF THE YEAR

It fell short of the features originally promised for Copland, but Mac OS 8 (\$99; 408/996-1010, www.apple.com)—Apple's most comprehensive operating-system upgrade in years—was still a very bright spot in an otherwise difficult period for the company. With a

Everyday Essentials



PRODUCTS MAC USERS SHOULDN'T DO WITHOUT

GENERAL-PURPOSE SYSTEM

WINNER: The Apple Power Macintosh G3/255 Desktop (\$1,999; 408/996-1010, www.apple.com) is an affordable system that leaves the latest Pentium machines in the dust.

RUNNERS-UP: The Power Computing PowerCenter Pro 210 (discontinued) was a faster version of our Consumer System winner. The Apple PowerBook 2400 (\$2,999; 408/996-1010, www.apple.com) has a tiny keyboard, but otherwise it's a feature-packed subnotebook.

CONSUMER SYSTEM

WINNER: The Power Computing PowerCenter Pro 180 (discontinued) was yet another example of a clone system that did Apple one better, giving consumers a fast and expandable system at a Kmart price.

RUNNERS-UP: The Motorola StarMax 5000/300 (discontinued) and the Umax SuperMac C600x/280 (\$1,995; 510/226-6886, www.supermac.com) are two other speedy yet affordable Mac OS systems.

PERSONAL PRINTER

WINNER: The Epson Stylus Color 800 (\$399; 310/782-0770, www.epson.com) redefined the standard for affordable ink-jet printers, producing razor-sharp text and near-photo-quality images—and fast.

RUNNERS-UP: The Epson Stylus Photo (\$500; 310/782-0770, www.epson.com) uses six colors to produce eye-popping photo prints at a great price. The Apple Color StyleWriter 6500 (\$469; 408/996-1010, www.apple.com) prints great text.

DISPLAY

WINNER: The NEC MultiSync LCD2000 (\$7,999; 630/775-7900, www.nec.com) costs a bundle, but it's got the most-stunning display quality of any LCD monitor we've seen.

RUNNERS-UP: The 17-inch Optiquequest V773 (\$510; 909/869-7976, www.optiquequest.com) and Sony Multiscan 220sf (\$799; 408/432-1600, www.sony.com) and the 19-inch Mitsubishi Diamond Pro 91TXM (\$1,700; 714/220-2500, www.mitsubishielectric.com/mea/) all offer excellent display quality.

INTERNET CLIENT PROGRAM

WINNER: Claris EMailer 2.0 (\$49; 408/727-8227, www.claris.com) offers a fast, searchable e-mail database and improved mail-filtering capabilities.

RUNNERS-UP: Pretty Good Privacy's PGP for Personal Privacy 5.0 (\$59; 602/944-0773, www.pgp.com) lets you seamlessly secure your e-mail privacy. Peter Li and Vincent Tan's NetFinder 1.2.1 (\$20; www.ozemail.com.au/~pli/netfinder/) is an FTP client that lets you resume interrupted downloads.

UTILITY

WINNER: Casady & Greene's Conflict Catcher 4.0.3 (\$70; 408/484-9228, www.casadyg.com) is simply the best start-up manager you can buy. It gives you complete control over all your start-up files.

RUNNERS-UP: Connectix's Speed Doubler 8 (\$54; 415/571-5100, www.connectix.com) turbocharges your applications, even under Mac OS 8. Dr. Solomon's Software's Virex with Speedscan 5.8 (\$99; 617/273-7400, www.dr Solomon.com) is the cream of Macintosh virus-protection software.

INPUT DEVICE

WINNER: The CalComp UltraSlate (\$165 to \$340; 714/821-2000, www.calcomp.com) offers a cordless, battery-free stylus and lets you set up hot keys in any application.

RUNNERS-UP: The Kensington Orbit (\$39; 415/572-2700, www.kensington.com) is an ergonomic trackball that feels like a mouse. The Wacom PL-300 (\$2,700; 360/896-9833, www.wacom.com) is a combination LCD monitor and digitizing

host of interface improvements—including spring-loaded folders, context-sensitive pop-up menus, and a sleek new gray-scale look—plus a multithreaded, PowerPC-native Finder, Mac OS 8 gave embattled Macintosh users something to cheer about.

And best of all, Mac OS 8 actually seemed to *improve* reliability, instead of causing major reliability problems—like some other system updates of recent years did.



Apple's solid OS upgrade

HARDWARE PRODUCT OF THE YEAR

In a year when digital cameras propagated like fruit flies, the Olympus D-600L (\$1,299; 516/844-5000, www.olympus.com) stood out from the swarm: it's a 3x zoom camera with superior optics and a 1,280-by-1,024-pixel resolution. While it's not for everyone, the D-600L heralds a new era of affordable digital cameras that don't compromise on quality.



Olympus's stellar D-600L

tablet that lets you see your work right at the tip of your stylus.

GAME

WINNER: Bungie Software's **Myth: The Fallen Lords** (\$50; 312/563-6200, www.bungie.com) sets a new standard for 3-D realism in a computer game.

RUNNERS-UP: MacSoft's **Quake** (\$45; 612/509-7600, www.wizworks.com/

macsoft/quake.htm) is a lightly customizable game. Red Orb's **Riven** (\$55; 415/382-4740, www.redorb.com) is the long-awaited—and beautifully realized—sequel to *Myst*.

GAMING HARDWARE

WINNER: CH Products' **F-16 Fighterstick** (\$120; 760/598-2518, www.chproducts.com) puts you in the cock-

pit with solid, responsive controls; lots of buttons and switches; and easy-to-use setup software.

RUNNERS-UP: CH Products' **Pro Throttle** (\$100; 760/598-2518, www.chproducts.com) is a small but feature-packed joystick. TechWorks' **Power3D** (\$250; 512/794-8533, www.techworks.com) is a 3-D-acceleration card that makes games really come to life.

Dynamic Media



THE BEST FOR MULTIMEDIA, VIDEO, AND THE WEB

WEB AUTHORIZING TOOL

WINNER: GoLive CyberStudio 2.01 (\$349; 650/463-1580, www.golive.com) is a WYSIWYG Web-page editor that provides all the bells and whistles that Web authors need.

RUNNERS-UP: Optima System's **PageSpinner 2.0.1** (\$25; www.algonet.se/~optima/pagespinner.html) is a text-based HTML editor that walks you through the process of creating Web content. Macromedia **Flash 2** (\$199; 415/252-2000, www.macromedia.com) lets you easily create low-bandwidth vector animations for the Web.

3-D GRAPHICS PROGRAM

WINNER: ElectricImage **Broadcast 2.7.5** (\$2,495; 626/577-1627, www.electricimage.com), from Electric

Image, brings ElectricImage Animation System features to video environments.

RUNNERS-UP: MetaCreations' **Infini-D 4.0** (\$599; 805/566-6200, www.metacreations.com) offers powerful modeling and rendering tools for a reasonable price. Onyx Computing's **Tree Professional 4.0** (\$495; 617/876-3876, www.onyxtree.com) lets you create models of trees and shrubs that would do Mother Nature proud.

INTERNET SERVER SOFTWARE

WINNER: StarNine Technologies' **WebStar 2.1** (\$499; 510/649-4949, www.starnine.com) is the king of Mac OS Web servers. Version 2.x offers dramatic speed improvements.

RUNNERS-UP: Maxum Development's **Rumpus 1.1** (\$195; 630/830-1113, www.maxum.com) is an easy-to-use FTP server; Blue World Communications' **Lasso 2.0** (\$399; 425/646-0288, www.blueworld.com) ties FileMaker databases to the Web.

MULTIMEDIA AUTHORIZING SOFTWARE

WINNER: Boasting a simplified Score window and other new features, Macromedia's **Director 6 Multimedia Studio** (\$995; 415/252-2000, www.macromedia.com) remains the premier tool for professional multimedia development.

RUNNERS-UP: Macromedia's **Authorware 4.0.1** (\$2,999; 415/252-2000, www.macromedia.com) is a solid upgrade to the high-end multimedia tool. Apple's **QuickTime VR Authoring Studio** (\$395; 408/996-1010, www.apple.com) is a comprehensive but easy-to-use QuickTime VR authoring package.

DIGITAL-VIDEO HARDWARE

WINNER: Combining a PCI card and software, Radius's **MotoDV** (\$450; 408/541-6100, www.radius.com) pulls video into your Mac through the speedy new FireWire interface.

RUNNERS-UP: ProMax's **FireMax** (\$595; 714/727-3977, www.promax.com) is a costly but full-featured FireWire card for video pros. The Canon **Optura** (\$2,495; 516/328-5000, www.ccsi.canon.com) is a digital camcorder and digital still camera.

DIGITAL-VIDEO UTILITY

WINNER: Terran Interactive's **Media Cleaner Pro 2.0** (\$359; 408/278-9065, www.terran-int.com) is a video-compression utility with Adobe Premiere export.

RUNNERS-UP: DigiEffects' **CineLook** (\$695; 415/841-9901, www.digieffects.com) adds film grain to digital video. MetaCreations' **Studio Effects** (\$695; 805/566-6200, www.metacreations.com) adds special-effects capabilities to Adobe After Effects.

World Class Awards

TECHNOLOGY OF THE YEAR

Intel may have the lion's share of the CPU market, but thanks to the **PowerPC 750**—aka the G3—IBM Microelectronics and Motorola Semiconductor Products Sector have the fastest chip, at least for now. It's not just the megahertz rating that makes this CPU a speed demon; with a backside cache connected directly to the chip, a 266MHz PowerPC 750 outperforms even a 350MHz PowerPC 604e.

Publishing and Design



THE BEST STUFF FOR PUTTING IT ON PAPER

DIGITAL CAMERA

WINNER: Olympus's **D-600L** (\$1,300; 516/844-5000, www.olympusamerica.com) stands out from the crowd. Superior optics, 3X zoom, and 1,280-by-1,024-pixel resolution make this camera a winner.

RUNNERS-UP: The Kodak **DC210 Zoom Digital Camera** (\$899; 716/724-4000, www.kodak.com) offers 2X zoom and 1,024-by-768-pixel resolution in a compact body. The Sony **Digital Mavica** (\$600; 201/930-1000, www.sony.com) uses a unique—if familiar—storage mechanism: a floppy disk.

PUBLISHING TOOL

WINNER: QuarkXPress **4.0** (\$995; 307/772-7100, www.quark.com), the first upgrade to the leading page-layout program in four years, extends its lead over Adobe PageMaker, with character styles, long-document-production features, and great drawing tools.

RUNNER-UP: With **Acrobat Pro 3.01** (\$295; 408/536-6000, www.adobe.com), Adobe's portable-document technology is becoming the lingua franca of prepress operations.

ART APPLICATION

WINNER: With its revised interface, automation functions, and special-effects layers, Adobe **Photoshop 4.0.1** (\$895; 408/536-6000, www.adobe.com) retains its commanding lead.

RUNNERS-UP: MetaCreations' **Painter 5** (\$299; 805/566-6200, www.metacreations.com) adds a host of new features to the popular natural-media painting program. Adobe **Illustrator 7.0.1** (\$249; 408/536-6000, www.adobe.com) offers a new interface that will be familiar to Photoshop users.

SCANNER

WINNER: Great scans and great software are a winning combination for the Epson **Expression 636 Professional** (\$1,599; 310/782-0770, www.epson.com), a fast 600-dpi flatbed scanner.

RUNNERS-UP: The Umax **Astra 600S** (\$180; 510/651-4000, www.umax.com) offers good image quality for an affordable price, while the Umax **PowerLook II** (\$1,600; 510/651-4000, www.umax.com) is a good choice for designers who want to reduce their reliance on service bureaus.

AUDIO SOFTWARE

WINNER: Mark of the Unicorn's **Free-Style 2.0** (\$195; 617/576-2760, www.motu.com) is a MIDI sequencer that lets musicians play at their own pace.

RUNNERS-UP: Steinberg North America's **Cubase VST 3.5.2** (\$399; 818/993-4161, www.us.steinberg.net) is the first sequencer to accept audio-effects plug-ins. BIAS's **Peak 1.63** (\$499; 415/331-2446, www.bias-inc.com) is a powerful audio editor.

GRAPHICS PLUG-IN

WINNER: Altamira Group's **Genuine Fractals** (\$159; 818/556-6099, www.altamiragroup.com) compresses high-quality images into incredibly tiny files.

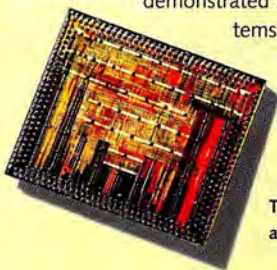
RUNNERS-UP: Alien Skin Software's **Eye Candy 3.0** (\$199; 919/832-4124, www.alienskin.com) is a wide-ranging collection of Photoshop plug-ins that lets you add special effects to your images. Extensis **PhotoTools 2.0** (\$130; 503/274-2020 ext. 135, www.extensis.com) is a production-oriented Photoshop plug-in collection.

PUBLISHING UTILITY

WINNER: Extensis **Preflight Pro 1.0** (\$400; 503/274-2020 ext. 135, www.extensis.com) gives service bureaus a powerful but easy-to-use tool for catching errors in QuarkXPress files—before they become costly output problems.

RUNNERS-UP: DiamondSoft's **Font Reserve 1.0** (\$100; 415/381-3303, www.fontreserve.com) makes sense of your fonts by storing them in a database. Extensis **QX-Tools 2.0** (\$100; 503/274-2020 ext. 135, www.extensis.com) is a handy set of utilities no QuarkXPress user should be without.

Apple offers 750-based systems running at 233MHz and 266MHz; before losing their Mac OS licenses last summer, Power Computing and Motorola Computer Group had demonstrated 750-based systems that ran even faster.



The PowerPC 750, aka the G3

CARY LU TECHNOLOGY LEADERSHIP AWARD

This new award, named in honor of the late *Macworld* contributing editor Cary Lu, recognizes significant technologies that found their way into Macintosh products. The first Cary Lu Technology Leadership Award goes to the Epson **Stylus Photo** (\$500; 310/782-0770, www.epson.com), an ink-jet printer that produces stunning photographic prints by adding a light cyan and light magenta to the conventional CMYK process colors. Thanks to the Stylus Photo, six-color printing technology is no longer limited to high-end digital presses and large-format printers.



Epson's impressive Stylus Photo

Programmer's Toolkit



MACWORLD AND MacTech PICK TOP DEVELOPER TOOLS

DEVELOPMENT ENVIRONMENT

WINNER: With **CodeWarrior Professional Release 2** (\$449; 512/873-4797, www.metrowerks.com), Metrowerks provides a single environment from which Macintosh programmers can create applications for the Mac OS, Windows 95, Windows NT, and

other platforms. Whether you write in C, C++, Object Pascal, or Java, CodeWarrior provides a home.

RUNNERS-UP: Bare Bones Software's **BBEdit 4.5.1** (\$119; 617/778-3100, www.barebones.com) remains the tool of choice for developers who hand-code their HTML. Staz Software's **FutureBASIC II** (\$230; 601/255-7085, www.stazsoftware.com) is the clear leader among BASIC programming tools for the Mac.

DEVELOPER TOOL

WINNER: Uni Software Plus's **Voodoo 1.8** (\$230; 43-7236-3338-82, www.unisoft.co.at) solves an important problem—keeping track of multiple file versions—in an elegant and powerful way. It is remarkably stable and offers solid integration with CodeWarrior.

RUNNERS-UP: MindVision Software's **Installer Vise 4.6.1** (\$695; 402/477-3269, www.mindvision.com) is an excellent software-installer creator for the Mac. Onyx Technology's **Spotlight DR2** (\$200; 941/795-7801, www.onyx-tech.com) is a solid stand-alone debugging utility.

RAPID-DEVELOPMENT TOOL

WINNER: Strong cross-platform features make ACI US's **4th Dimension 6** (\$299; 408/252-4444, www.acius.com)

the best choice for rapid development of custom database applications.

RUNNERS-UP: Digitool's **MCL 4.1** (\$675; 617/441-5000, www.digitool.com) is a rich development tool based on the current industry standard Common Lisp programming language. Water's Edge Software's **Tools Plus 3.3** (\$150 to \$200; 416/219-5628, www.interlog.com/~wateredg/) speeds application development in Metrowerks' CodeWarrior and Symantec Think C/C++ or Think Pascal compilers.

TOOL FOR NEW TECHNOLOGIES

WINNER: Metrowerks' **CodeWarrior Latitude** (\$399; 512/873-4700, www.metrowerks.com) leads developers to the next generation of operating systems by helping them move their Mac OS code to the Rhapsody Yellow Box.

RUNNERS-UP: AAA+ Software F&E's **Joy** (\$795 to \$4,995; 43-1-533-6665-0, www.aaa-plus.com) is really a pair of Rhapsody development tools: Joy Explorer is an excellent learning aid, while Joy Developer lets you quickly create Rhapsody applications. Symantec's **Visual Café for Macintosh 1.0.2** (\$300; 408/253-9600, www.symantec.com) offers a rich set of Java development tools. **m**

World Class Awards

IMPACT AWARDS

One you know, the other you probably don't. But Apple interim CEO **Steve Jobs** and former Power Computing marketing manager **Mike Rosenfelt** both made a big difference in the Mac market last year.

Steve Jobs took Apple's reins in July and quickly made his mark on the company he cofounded. He reworked the board of directors, forged a controversial deal with Microsoft, and gave a new sense of direction to what had been a rudderless enterprise. But he also killed Apple's Mac OS-licensing program, and by cutting out the clone vendors, he cut off a prime source of

innovation. Whether you agree or disagree with his moves, he has clearly had an impact. While Macworld believes it is too soon to say whether Jobs will ultimately be good for Apple, we can't deny his impact.

Mike Rosenfelt never made the cover of *Time* or *Newsweek*, but the guerrilla marketing techniques he brought to Power Computing helped reenergize the Macintosh community in a manner we haven't witnessed since a pirate flag flew above Apple's Cupertino HQ many years ago.

He was the man behind the bullhorn at Power Computing's



Mike Rosenfelt

Macworld Expo pep rallies and the brains behind such memorable stunts as bungie-jumping platforms and a fleet of Mac-promoting humvees. At a time when Apple

seemed never to have its act together, Rosenfelt and Power Computing inspired us all to fight back for the Mac.

LIFETIME ACHIEVEMENT AWARD

Richard Zulch is one of the unsung heroes in Macintosh history. He's the cofounder of Dantz Development, the company that gave us Retrospect, but his contributions to the Mac go far beyond backup-utility software.

Zulch played a key behind-the-

scenes role in developing nearly every major storage driver for the Macintosh. You may take it for granted that your Mac works with hard drives from companies other than Apple; it was Zulch who helped make it happen. Zulch was also a driving force behind HFS+, the new file system introduced with Mac OS 8.1 (see *News*, this issue). None of his work had a direct financial benefit for Dantz; instead, he gave freely of his time so that Macintosh users could have a better computing experience.

His has truly been a lifetime of great achievement on behalf of the Macintosh.



Richard Zulch



Steve Jobs

Digital Mavica®

Imagine That. On a Floppy.™



SHOOT!

10x optical zoom lens • Up to 500 shots per battery charge* • 5 exposure settings • 4 in-camera special effects



STORE!

Standard 3.5" floppy disk • No wires, cables or drivers • Up to 40 images per floppy • Universal JPEG file format

Database Files



Spreadsheets

PROJECTED 1998

1998	\$5639	\$5639	\$5639
1997	\$4778	\$4778	\$4778
1996	\$4129	\$4129	\$4129
1995	\$3735	\$3735	\$3735
1994	\$3369	\$3369	\$3369
1993	\$2488	\$2488	\$2488
1992	\$1957	\$1957	\$1957

Word Processing Documents



Page Layout Documents



SHOW!

Add images with ease • 640 x 480 24 bit VGA color • Mac/Windows compatible

A PARENT'S WISH

"A computer my
kids will **learn** from and
I can put to **work**."



UMAX
MAKES WISHES COME TRUE!

C600

The SuperMac C600 line from UMAX is perfect for your educational computing needs. Choose from

a range of quality machines that all deliver high-end performance at a very low cost. With the C600, you can do easy projects such as calendars, newsletters, term papers, greeting cards, and more. All this from UMAX, a company committed to providing the best in customer service and support for Mac OS systems. The SuperMac C600. It's perfect for the office or home.

C600vPC/240*

Now you get Windows and Mac capabilities on one powerful machine!

- 240MHz 603e PowerPC Processor
- 3.3GB IDE hard drive
- 24x CD-ROM Drive
- 32MB RAM, 256K L2 Cache
- Stereo Multimedia External Speakers
- 10Base-T Ethernet
- Connectix Virtual PC (DOS edition) and other software
- Expandable Mini-Tower Case

Other models and specifications available.
*Monitor not included.

For more information on where to purchase the C600, call 1-888-625-UMAX or visit us at <http://www.umax.com>.



PowerPC



UMAX
Computer Corporation

© 1997 All rights reserved. SuperMac is a registered trademark licensed to UMAX Computer Corporation. Mac and the Mac OS logo are trademarks of Apple Computer, Inc. used under license. PowerPC and the PowerPC logo are registered trademarks of International Business Machines Corporation.

Circle 99 on reader service card

Macworld
LAB TEST

BY BROOKE C. WHEELER

You're running out of patience—not to mention space. You've been spending too much time in data-transfer limbo, waiting to move your huge graphics, sound, or video files from external storage. And you're outgrowing your existing storage capacity; maybe you've almost filled your current hard disk. It's time for more space—and more speed.

So what are your options? Portability isn't the main issue for your archiving and access needs, and portable removable-media drives have limitations such as slower data transfer and degradable media.

Another high-capacity SCSI-2 Fast drive (the kind most Macs have as their internal drives) won't give you the faster transfer rate you need for huge files.

And a low-end RAID will keep bulky files at your fingertips at high speed—but also at a high price. If you want high-capacity storage that's less costly than RAID and faster than your current SCSI hard drive,

your best choice is a drive with the speedy kick of Ultra SCSI.

Ultra SCSI delivers where it matters; it's not enough to buy a faster hard drive—more important is the efficiency of your drive's input/output. Ultra SCSI can deliver up to double the data-transfer speeds of SCSI-2 and quadruple that of your old SCSI-1 devices: 40-MBps maximum throughput for Ultra Wide

Store More Faster

Macworld Lab Finds the
Speediest 9GB Hard Drive



SCSI, 20 MBps for Ultra Narrow SCSI, 20 MBps for SCSI-2 Fast Wide, 10 MBps for SCSI-2 Fast and SCSI-2 Wide, and 5 MBps for SCSI-1.

It's critical to remember that to achieve the maximum drive performance, both the drive and the SCSI circuitry must support the same speed. Thus, to get the 40-MBps performance of an Ultra Wide SCSI drive, you must use the drive with an Ultra Wide SCSI port or card. No Macs have such a port, although Umax Computer's SuperMac S900/250 systems include an Ultra Wide SCSI card. Such cards cost about \$500 when purchased separately and \$200 to \$400 when purchased with a drive.

Remember that if you use, for example, a SCSI-2 Fast drive on an Ultra Wide SCSI port, you'll be limited to SCSI-2 Fast's 10-MBps transfer rate. You can connect an Ultra Narrow SCSI drive to an internal SCSI-2 Fast connector and an Ultra Wide SCSI drive to an internal SCSI-2 Wide connector (which some SCSI cards have), but you'll need an adapter to connect to an external SCSI-1 port or to connect a Wide drive to a non-Wide connector or a non-Wide drive to a Wide connector. Ultra Wide SCSI cards come with both Ultra Wide and Ultra internal connectors, but if you use both internal connectors, you won't be able to use the external connector.

Remember, too, that most Macs use an internal SCSI-2 Fast connector and an external SCSI-1 port. And keep in mind

that Ultra SCSI cards are PCI-based, so they won't work in NuBus-based Macs.

You can find internal drives at many computer stores and in some catalogs. If you have the open drive bays in your Mac, we recommend internal drives, which take less space and cost less than external models. However, note that some case designs may cause drives to overheat. On the other hand, external drives run the risk of being damaged when they are moved or bumped.

The Ultra Difference

To assess the options, Macworld Lab tested eleven 9GB Ultra Wide SCSI external hard drives that can deliver data-transfer rates up to 40 MBps. We tested each drive both with and without an Ultra Wide SCSI PCI adapter card recommended by the manufacturer or included with the drive on request. With an Ultra Wide SCSI adapter card installed, opening and saving a 20MB Adobe Photoshop file was an average of 30 percent faster and copying files to and from the drives was an average of 34 percent faster.

For example, it took us 21.7 seconds to open a 20MB Photoshop file stored on the MacProducts USA (www.blol.com) Magic Ultrastar 2XP drive without the adapter card, but installing the card cut that time by 41 percent, to 12.8 seconds. Saving a 20MB Photoshop file to the Q9000W drive from APS Technologies (www.apstech.com) took 15.3 seconds without the card, but the card cut the wait

by more than 21 percent, down to 12.0 seconds. Copying files to the Jems Data Unlimited (www.jemsdata.com) 9000C drive took an average of 7.2 seconds without the card and 5.2 seconds with—a speed gain of more than 28 percent.

Four of the drives we tested—the Jems drive, the MicroNet Technology (www.micronet.com) Premier Wide 9100 drive, and both MacProducts drives—are available bundled with (or recommended for use with) an Atto Technology ExpressPCI card (\$345 street price; 716/691-1999, www.attotech.com). The other seven drives come with the Adaptec PowerDomain 2940UW card (\$349 list price; 408/945-8600, www.adaptec.com).

Both cards are essentially the same in SCSI acceleration, so either should suit your purposes just fine. Which card was installed with which drive didn't affect our results; the Atto and Adaptec cards were scattered up and down the performance scale, but the Adaptec card costs less, which may tip the balance toward that card.

Beyond Ultra SCSI

The performance of the drives we tested is also determined by other factors, including which drive mechanism is used, how fast the mechanism spins (its rpm), and how large a cache the drive has.

All the drives we tested have a 512K cache, except the APS Q9000W and the La Cie (www.lacie.com) D2, which have 1MB each. The larger cache turned out to

9GB Ultra SCSI Hard Drives Compared

Company	Product	Mouse Rating	List Price (no Ultra Wide SCSI card)	List Price (with Ultra Wide SCSI card)	Phone	Mechanism
APS Technologies	Q9000W	★★★★½	\$1,000	\$1,200	816/483-1600	Quantum XP39100W
	ST9000W	★★★	\$1,250	\$1,450		Seagate ST19171W
	EDITORS' CHOICE ST9100W	★★★★½	\$1,100	\$1,300		Seagate ST19101W
D.C. World Connections	WCST19101W	★★★	\$1,170	\$1,600	612/921-9778	Seagate ST19101W
Direct Source	DSC19101W	★★★★½	\$1,119	\$1,319	612/884-0527	Seagate ST19101W
Jems Data Unlimited	9000C	★★★	\$2,075	\$2,450	508/749-3660	Seagate ST19171W
La Cie	D2	★★★★½	\$900	\$1,130	503/844-4500	Quantum XP39100W
MacProducts USA	Magic Cheetah ST19101W	★★★★½	\$1,330	\$1,679	512/485-4600	Seagate ST19101W
	Magic Ultrastar 2XP	★★½	\$950	\$1,299		IBM DCHS09W
MicroNet Technology	Premier Wide 9100	★★★	\$1,795	\$2,294	714/453-6100	Seagate ST19101W
ProDirect	EDITORS' CHOICE PDS19101W	★★★★½	\$1,099	\$1,299	612/941-1805	Seagate ST19101W

greatly boost those drives' scores on our Claris FileMaker Pro tests—most notably for the La Cie D2—where searching through and sorting a database benefits from the extra cache because much of the same data is being reexamined.

This bumped up the final scores for those two drives, but misleadingly so if your primary work is not in database management. The APS Q9000W and the La Cie D2 actually consistently had average or below-average scores on all the other tests.

This is due in part to the slower spin rate (7,200 rpm) of the two drives. Five of the drives we tested—the APS Q9000W and ST9000W, the Jems 9000C, the La Cie D2, and the MacProducts Magic Ultrastar 2XP—run at 7,200 rpm. The faster the spin rate, the faster the drive head can access data on the disk, which translates into faster performance.

Two of the slowest performers (the APS Q9000W and the La Cie D2) also share the same mechanism: the Quantum XP39100W. The slowest performer overall (MacProducts' Magic Ultrastar 2XP) has the only IBM mechanism of the bunch, the DCHS09W.

The strongest-performing combination was a Seagate ST19101W mechanism running at 10,000 rpm. This is the mechanism in six of the drives we tested (including the two that tied for Editors' Choice): APS Technologies' ST9100W, the ProDirect (www.pdisales.com) PDS19101W, MacProducts' Magic Cheetah ST19101W,

the Direct Source (www.pdisales.com) DSC9101W, the D.C. World Connections (www.deworldconnections.com) WCST19101W, and MicroNet's Premier Wide 9100.

In general, rpm and a quality mechanism are better determiners of overall performance than cache size. But the cache still plays a vital role in speeding up certain types of execution, as is evidenced by the two 1MB-cache drives that topped out the FileMaker results.

Buying Big: A Better Bargain

For the extra money you're investing in Ultra SCSI, it makes sense to buy a drive with enough capacity to last. Besides, piling multiple smaller-capacity Ultra SCSI drives onto one chain may be risky: Its faster speeds make Ultra SCSI more sensitive to electronic disturbance, which is more likely on longer SCSI chains. While two 4.3GB drives might cost a little less than one 9GB drive, the difference is not worthwhile for most people and the gap is closing every month.

Also, the cost per megabyte of hard drives has gradually fallen, giving you a better bargain—and more reason to buy a higher-capacity drive. Consider that in late 1996, a 4GB drive would have cost you 32 cents per megabyte and a 9GB drive would have run you an average of 33 cents per megabyte. In mid-1997, prices for drives with capacities from 4GB to 9GB averaged around 23 cents per megabyte.

Prices are still falling. The 9GB drives we tested in late 1997 cost an average of 13 cents per megabyte; factoring in the additional cost of the adapter card, they still cost only 17 cents per megabyte.

The Cost of Ultra

For the extra speed benefits of Ultra SCSI, you'll pay from 2 cents to 5 cents more per megabyte for these 9GB drives: that's \$185 to \$460 extra. The drives from APS and ProDirect cost 2 cents more per megabyte for the Ultra SCSI benefit, and the drives from Direct Source and La Cie, as well as MacProducts' Magic Ultrastar 2XP, cost 3 cents more. Less of a bargain, the Jems drive (the most expensive drive) and the MacProducts Magic Cheetah ST19101W cost 4 cents more per megabyte. The second-most-expensive drive, the MicroNet Premier Wide 9100, costs a whopping 5 cents more per megabyte.

Is it worth it? You pay an average of

17 percent more for a 32 percent boost in speed. For example, if you buy an APS ST9100W, for 2 cents more per megabyte (which comes to \$185 for the drive), you can save an average of 5 seconds every time you open or save a 20MB Photoshop file on the drive. When you add it up long-term, the time saved is worth that extra money.

However, some drives—such as those from Jems and MicroNet—don't necessarily justify their higher cost with better performance. For the same 5-second Photoshop savings, you'll need to spend 4 cents more per megabyte (\$370 total) for the Jems drive and 5 cents more (\$460 total) for the MicroNet drive. Plus, those two drives had only average or below-average scores on the majority of the tests.

The Right Setup

Your drive should include a complete set of support materials, including a formatting utility, an updated driver, cables, and manuals for both software and hardware. All the drives reviewed here include the necessary cables plus a five-year warranty. And all have the same capacity after formatting: 8.4GB.

Older Drives Because of Ultra SCSI's sensitivity to electronic disturbance, it's better to keep your SCSI-2 and SCSI-1 devices (hard drives, scanners, and removable drives) hooked up to the Mac's regular SCSI-2 port—especially trickier devices such as scanners that tend to have termination problems.

Drive Utilities Every drive comes with a disk-formatting utility. We found that the most straightforward and simplest-to-use utility was FWB's Hard Disk Toolkit Personal Edition 2.06, which comes with the ProDirect PDS19101W. The two utilities that were more of a hassle to use were MicroNet's DiskWorks 3.2.5 and La Cie's Silverlining 5.8.1.

The drives from Direct Source, Jems, MacProducts, and D.C. World Connections come with CharisMac Engineering Anubis 2.56, and the APS drives come with APS PowerTools 4.1; these were comparable and reasonably easy to use. We don't recommend switching utilities, because we found slight discrepancies in test results when different utilities were used. It's best to use the utility recommended (and included) by the manufacturer.

Documentation A few of the drives we tested, notably the APS drives and the La Cie D2, come with excellent docu-

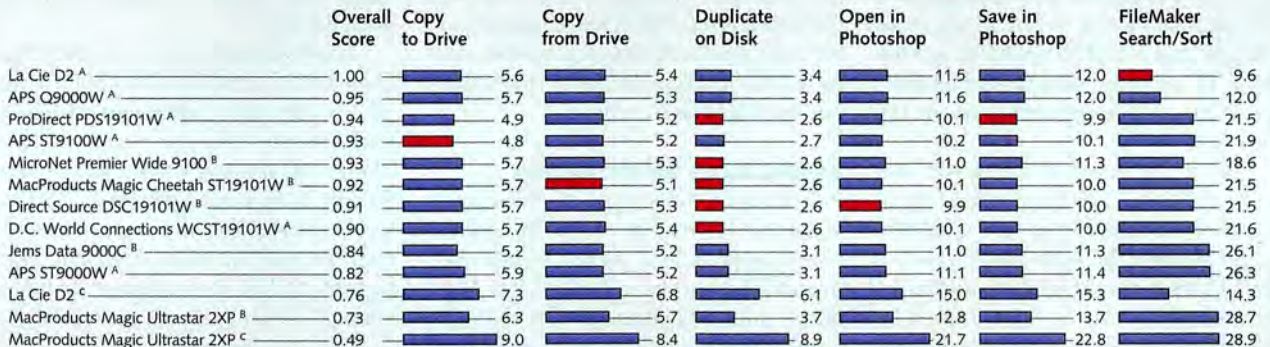
Comments
Great price; one of the slowest performers in most tests; built-in, active termination.
Mediocre performance for a higher price, but with built-in, active termination.
Excellent performance; reasonable price; built-in, active termination; good documentation.
Average speed for above-average price and clunker of a case.
Average performance; average price; no hardware manual.
Mediocre speed at a hefty price; no hardware manual.
Budget price; mediocre performance; good documentation; built-in, active termination.
A little pricey; decent performance; no drive-setup documentation.
Decent price but weakest performer; no documentation.
Too pricey for average performance; bulky, blocky case.
Excellent performance; reasonable price; easiest formatting utility.



Which Ultra Wide SCSI Drives Deliver the Most?

Although both Ultra Wide SCSI cards used in our testing helped the drives deliver much better performance than with the Mac's standard SCSI-2 connectors, the drives did not always take advantage of the card. The lesson: One 9GB drive is not necessarily the same as the next 9GB drive. Also note that having a larger cache (as the La Cie D2 and the APS Q9000W do) speeds up database operations but not necessarily file opens and saves or file copies.

■ Best result in test. Drives are listed in order of performance, best (an index score of 1.00) to worst. All times are in seconds. Shorter bars are better.



^A Using Adaptec card ^B Using Atto card ^C Using standard SCSI-2 connector

Behind Our Tests

To test access speed, Macworld Lab performed two finds and two sorts of a 9,054-record Claris FileMaker database. For an indication of data throughput, we opened and saved a 20MB file in Adobe Photoshop. To determine general performance, we duplicated two files totaling 34.7MB in the Finder and copied

the files to and from each drive. All drives were tested with an Ultra Wide SCSI adapter card. Tests were conducted on a Power Macintosh 7300/200 with 32MB of RAM and Mac OS 8. —Macworld Lab testing supervised by Gil Loyola

EDITORS' CHOICE

★★★★½ **APS ST9100W** This drive offers the best performance—by a small margin—with a Seagate ST19101W mechanism running at 10,000 rpm, plus built-in, active termination and excellent documentation. All in all, it's an excellent buy. **Company:** APS Technologies (816/483-1600, www.apstech.com). **List price:** \$1,100; with Adaptec PowerDomain 2940UW card, \$1,300.

★★★★½ **ProDirect PDS19101W** This drive is an outstanding value in terms of price/performance, thanks in part to its Seagate ST19101W mechanism running at 10,000 rpm. The drive also comes with an easy-to-use formatting utility, and it's all at a great price. **Company:** ProDirect (612/941-1805, www.pdisales.com). **List price:** \$1,099; with Adaptec PowerDomain 2940UW, \$1,299.

REAL PRODUCTS REAL RATINGS

Reviews you can trust Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.

mentation. But some drives, such as those from D.C. World Connections and Direct Source, have only decent software documentation but none for the hardware. And some, such as MacProducts' Magic Ultrastar 2XP, have little or no documentation at all.

Easy Termination A SCSI chain is divided into segments, each of which requires a terminator at each end to maintain an unbroken electrical path; termination tells a signal that it's reached the end of its path.

Four of the drives we tested, the three APS drives and the La Cie D2, have built-in, active switchable termination. Active termination, which means that the drive is actively assessing where it is on a SCSI chain and determining which signals are meant for it, is better for longer SCSI chains. Built-in, switchable termination means that you simply flip a switch to activate termination.

The rest of the drives require external termination, meaning that you need to plug a terminator block into a connector on the outside of the drive. Both kinds of termination have pros and cons; while built-in switchable is a no-brainer, some people prefer the visual confirmation of a terminator block plugged into the out-

side of the drive. Either way, you want active termination. Active terminator blocks are available for drives that require external termination, although they are much more expensive (\$40, versus \$15 for passive terminators).

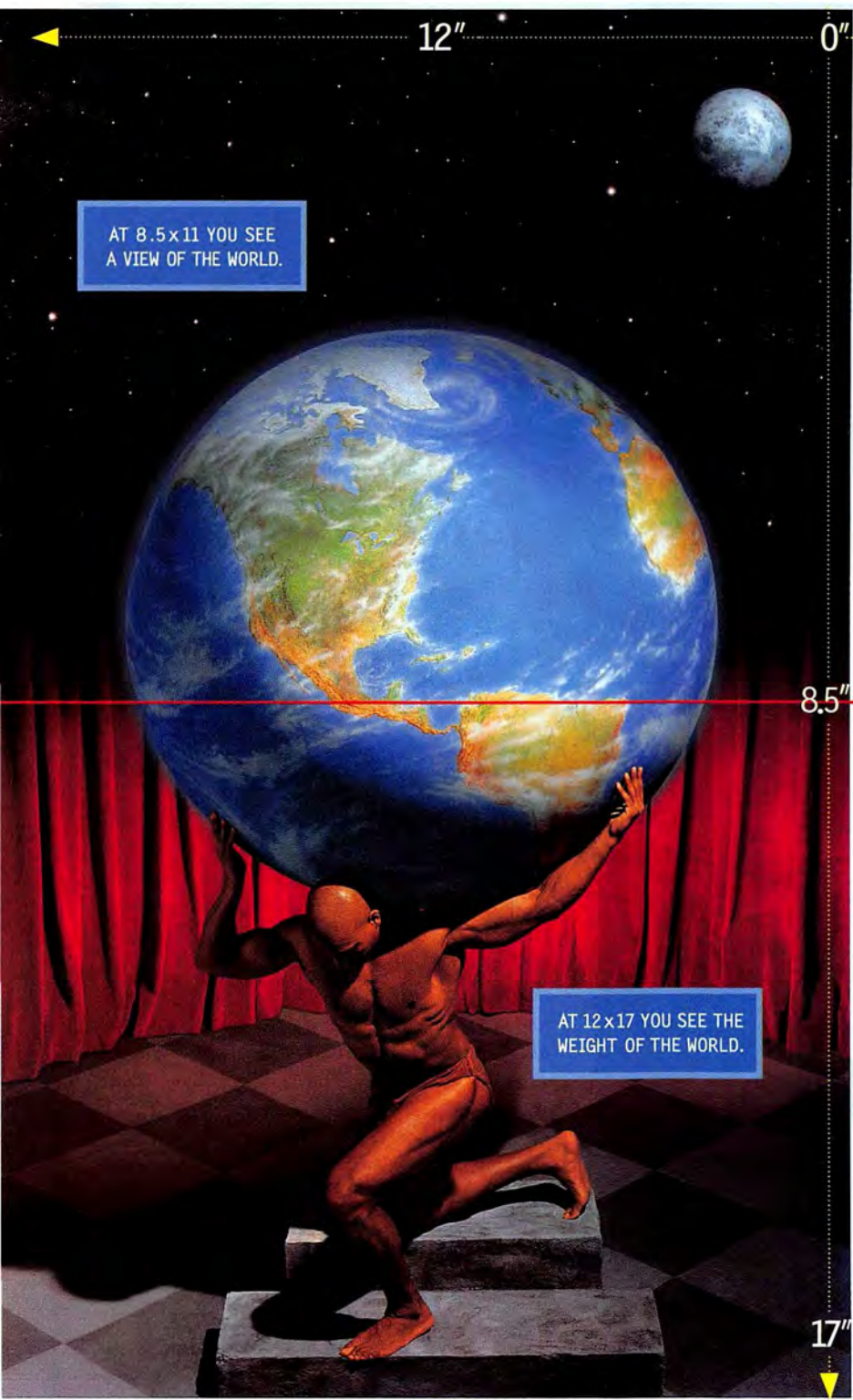
Macworld's Buying Advice

We had a tie for the best price/performance: the APS ST9100W and the ProDirect PDS19101W. Both use a Seagate ST19101W mechanism and run at 10,000 rpm—a recipe for success, especially when coupled with their equally low price tags. The price of each drive is \$200 less than the average. The APS drive's built-in, active termination and excellent documentation make it slightly better than the ProDirect drive, but either drive is an excellent buy.

With today's files growing larger, it's only natural that storage should be getting bigger and faster. And thanks to Ultra SCSI, there's now a middle ground between your current, slower storage and a high-priced RAID. Ultra SCSI is an excellent solution for anyone working in content creation today. **m**

Associate editor BROOKE C. WHEELER covers 3-D graphics, digital video, multimedia, and storage.

This 12"x 17" image scans at 300 dpi in just 50 seconds and previews in just 12 seconds.



**INTRODUCING THE
EPSON EXPRESSION™ 836XL
LARGE-FORMAT SCANNER:
STRIKING 12x17 FULL-BLEED
IMAGES FOR UNDER \$3000.**

To carry the world, you need to be big and powerful. Like the Expression 836XL with 800 x 1600 true optical resolution and 36-bit color. AutoFocus optics along with high 3.3 dynamic range captures every detail in the world. So scans from photos, transparencies, and even small 3-D objects become professional-quality reproductions. Our exclusive LaserSoft™ SilverFast™ driver gives you the power to control color balance, tone curves, highlights, shadows, sharpening and descreening. And batch scanning along with incredible scan speeds means you'll be more productive. You could say the Expression 836XL is so powerful, it'll change your entire view of the world. Well, at least when it comes to scanning. For more information on our award-winning line of scanners, call 1-800-241-5747 and ask for Operator 3214. Or visit us at our website: www.epson.com.



Awards won by the Expression family of color scanners.

Scan speeds determined by scanning a 54MB file using Adobe Photoshop on a 300MHz Power Mac 8600 with 64MB of RAM. EPSON is a registered trademark of Seiko Epson Corp. Expression is a trademark of Epson America, Inc. All other trademarks are properties of their respective companies. © 1997 Epson America, Inc.

YOU'VE GOT TO SEE IT IN

EPSON

COLOR.



YOU'VE ALWAYS BEEN AN ORIGINAL THINKER.
JUST DON'T GET TOO CREATIVE WHEN YOU'RE
CHOOSING MEMORY.



NOT CONCERNED about your brand of memory? It's time to "think different."

The fact is, the new high-performance Macs require high-performance memory such as SDRAM (synchronous DRAM). Consequently, www.kingston.com/ad

timing errors as small as a nanosecond can lead to data corruption. That's why Kingston® imposes stringent design controls to regulate timing, such as matching trace lengths to ensure proper synchronization of data. And since we're an authorized Apple® RAM developer, our memory will always be 100 percent compatible with your Mac®. To find out more, call your preferred reseller or Kingston at (800) 259-8965. Or visit our Web site. We promise not to tell people that you're playing it safe.

Kingston
TECHNOLOGY

COMPUTING WITHOUT LIMITS.™



Kingston Technology Company, 17600 Newhope Street, Fountain Valley, CA 92708 USA, (714) 435-2600, Fax (714) 435-2699. © 1997 Kingston Technology Company. All rights reserved. Computing Without Limits is a trademark of Kingston Technology Company. Apple and Mac are trademarks of Apple Computer Inc., registered in the U.S. and other countries. All other trademarks and registered trademarks are the property of their respective owners.

Circle 201 on reader service card

Macworld
LAB TEST

BY JEFF PITTELKAU

How's this for a disaster? You arrive at a business presentation, sales call, or product demo to find that your PowerBook loaded with the presentation won't connect to your client's PC monitor—or your LCD projection pad is unusable because the overhead projector is being used in another meeting. Here's your solution: Avoid all these troubles, and bring your own self-contained multimedia projector.

Multimedia LCD projectors include their own light source; speakers; and inputs for Macs, PCs, and VCRs. Most weigh under 20 pounds, so you get mobile-presentation insurance without breaking your back. And with prices under \$10,000, you may be able to invest in a couple of projectors for the whole office.

To help you pick the best of these portable wonders, Macworld Lab examined 11 multimedia projectors, putting them through their paces in a conference-room environment. We judged the projectors on brightness, image quality, color saturation, sound quality, and ease of use.

We connected each projector to a Power Mac 7300/200 and a PowerBook 3400 (without its special video adapter, which is easy to lose), noting how easy

Prime-Time Projectors

New Lightweight **Projectors**
Make Your Multimedia
Presentations Shine



or difficult it was to make all of the connections and how well (or whether) everything worked.

The color test images we used on the desktop and laptop computers included a simple, fully saturated graphic image; a chart; and a photograph of a person. We also projected a videotape to evaluate each projector's NTSC video-display quality. And finally, we played a music CD to evaluate each projector's built-in, amplified speakers.

Better Technology, Easier to Use

Today's multimedia LCD projectors have more-advanced capabilities, performance, and portability than those of years past. All the projectors we tested support Apple's new PowerBook resolution of 800 by 600 pixels (the SVGA standard on PCs) as well as the desktop Mac resolution of 832 by 624 pixels (although most projectors achieve the latter by compressing the image).

Seeing Is Believing

LCD Modules An LCD projector produces color images by passing light through a combination of LCD modules (liquid crystal sandwiched between two pieces of glass) and color filters. Projectors with a single LCD module use a trio of subpixels (as a CRT monitor does) carefully aligned to red, green, and blue filters bonded onto the LCD module, to make each complete pixel. This leads to a loss of light, due to the mask pattern that separates each pixel into smaller red, green, and blue subpixels.

Projectors with three LCD modules are brighter and produce more-saturated

color. Each module has its own single-color filter, and the modules are arranged with a combination of mirrors and prisms to align the light as it passes through each module. The pixels are full-size, and there's minimal mask material to block light passing through the LCD modules.

CTX Opto's \$4,495 EZ Pro 550 and \$5,495 EZ Pro 580 (www.ctxopto.com) and Lightware's \$3,995 MVP800 (www.lightware.com) were the only projectors still using single LCD modules—and projected the dimmest images. The rest of the projectors use triple LCD modules, and the brightest images of the bunch came from Proxima's \$8,999 Desktop Projector 5900 (www.proxima.com), NEC Technologies' \$8,495 MultiSync MT810 LCD Projector (www.nec.com), and Epson America's \$8,499 PowerLite 5000 (www.epson.com). Still, all were bright enough to project acceptable-quality images in a partially lit conference room when placed six feet from a white screen.

Light Source The projector's light source also influences image quality and color. All the projectors we tested displayed excellent color images, except one: the EZ Pro 550 with its tungsten-halogen light source produced slightly dingy, yellowish images compared with those produced by the rest of the projectors, all of which feature a metal-halide arc lamp.

Metal-halide arc lamps produce a cleaner, whiter image and last much longer—from 500 to 8,000 hours, according to manufacturers. (A metal-halide lamp's life expectancy depends on how the lamp is designed.) But they're expensive to replace: a new arc lamp will set you back

\$300 to \$500. Fortunately, for most users metal-halide lamps will last for years.

Projecting Video If you plan primarily to project videotapes playing from a VCR, consider the EZ Pro 580, the Lightware MVP800, or the \$5,995 Vivitek Voyager AV200 (www.vivitek.com); all three produced the cleanest images when displaying videotape. The Voyager AV200 also has a TV tuner, so you can put it in the company break room when it's not traveling and gather around to watch press conferences or the big game. The \$8,795 Ask LCD Impression A4 (www.ask.no) and the \$7,495 Philips Electronics 4600 Endurance (www.philipslcd.com) fared the worst: both displayed video that was noisy and blurry. The other six projectors had acceptable-quality video display.

Do You Hear What I Hear?

Initially, we didn't expect much sound quality, since these small projectors have no room for the large speakers necessary for good bass response. But some of the projectors impressed us with their ability to fill a room with reasonably clear audio.

In Focus Systems' \$8,499 LitePro 720 (www.infocus.com) and the Philips 4600 Endurance had good volume and were loud enough to fill a conference room or classroom with sound. The Desktop Projector 5900 and the \$6,995 Sharp Electronics XG-NV1U (www.sharp-usa.com) were reasonably loud, enough for a smaller conference room. The remaining seven projectors either couldn't get loud enough or the sound distorted too much when the volume was turned way up, and so are best used for small meetings.

If you want true high-fidelity audio

Getting the Big Picture

Company	Product	Mouse Rating	List Price	Phone	Weight (in pounds)	Dimensions (l x w x h, in inches)	Warranty (in years)	Carrying Case Included	Display Technology
Ask LCD	Impression A4	★★★	\$8,795	212/896-8888	11.00	14.7 x 9.8 x 5.4	2	●	triple LCD
CTX Opto	EZ Pro 550	★★★	\$4,495	408/541-6060	9.25	6.4 x 12.5 x 10.2	2	●	single LCD
	EZ Pro 580	★★★½	\$5,495	408/541-6060	9.25	6.4 x 12.5 x 10.2	2	●	single LCD
Epson America	PowerLite 5000	★★★½	\$8,499	310/782-0770	14.10	9.7 x 15.0 x 6.3	1	○	triple LCD
In Focus Systems	LitePro 720	★★★★	\$8,499	503/685-8888	12.00	15.3 x 11.7 x 6.6	1	○	triple LCD
Lightware	MVP800	★★★½	\$3,995	503/641-7873	9.45	12.5 x 10.2 x 6.4	1	●	single LCD
NEC Technologies	MultiSync MT810 LCD Projector	★★★½	\$8,495	508/264-8000	15.60	12.6 x 15.6 x 5.7	2	○	triple LCD
Philips Electronics	4600 Endurance	★★★★	\$7,495	770/821-2400	17.50	13.0 x 6.5 x 13.0	2	○	triple LCD
Proxima	Desktop Projector 5900	★★★½	\$8,999	619/457-5500	14.00	15.6 x 10.8 x 6.5	1	○	triple LCD
EDITORS' CHOICE									
Sharp Electronics	XG-NV1U	★★★★	\$6,995	201/529-8200	16.50	15.3 x 10.4 x 4.7	3	○	triple LCD
Vivitek	Voyager AV200	★★★½	\$5,995	503/533-8444	14.00	9.0 x 6.5 x 13.5	1	○	triple LCD

● = yes; ○ = no.

with any of these projectors, we recommend external, amplified speakers such as Cambridge Soundworks' \$100 PCWorks (617/332-5936, www.hifi.com).

Sweating through Setup

When you give a presentation, your audience always notices how competent you appear when setting up—and no audience likes to be kept waiting while you fiddle around with a mess of cables and adapters.

The MultiSync MT810 is one of the easiest projectors to set up, thanks to its unique, single MultiCable and dual input connectors; you simply reverse the cable depending on whether you're connecting to a Mac or a PC. The NEC MultiCable also works with the PowerBook 3400's VGA-style connector without needing a Mac adapter—leaving you one less thing to tote around.

The LitePro 720 comes with reversible Mac-and-PC cables and the handy CableWizard, a connection hub with a dial you turn to expose appropriate Mac or PC connectors. It's easy to figure out and works with desktop Macs and PCs, but it's not compatible with the PowerBook's VGA-style connector. To use the LitePro 720 with a PowerBook 3400 or 2400 you need to use the special VGA-to-Mac video adapter (included with the PowerBooks) in conjunction with the CableWizard. You don't need the adapter with any of the other PowerBook models that have video-out capability, because they use a special cable that terminates to a Mac-style video connector.

Similarly, we found Apple's VGA-to-Mac adapter necessary with the EZ Pro 550 and 580 and Lightware's



A Matched Set The In Focus LitePro 720 is the only projector in our roundup with the same button configuration for both on-projector and remote controls.

MVP800. All the other projectors worked when directly connected to the PowerBook 3400 using supplied PC VGA cabling.

Two projectors had unnecessarily cumbersome cabling schemes. The Impression A4 included a hydralike tangle of breakout cables that mate its proprietary projector connectors to computer, video, and audio sources—and subsequently create cable clutter around the projector. The Lightware MVP800 requires separate adapters (included) for Mac video, Mac ADB, and sound input—more small extras to carry around.

Taking Control

Controlling a multimedia LCD projector in a real conference-room setting brings to light many small—and important—differences.

We found the best on-projector controls on the Sharp XG-NV1U and the LitePro 720. Their brightly backlit buttons are easy to identify in complete darkness,

and control easy-to-use on-screen menus.

The LitePro 720, Philips 4600 Endurance, and Sharp XG-NV1U have the best remote controls. In Focus is the only vendor whose remote buttons match those on the projector, so you don't have to learn two sets of control buttons for one machine. The small, sleekly styled remote from Philips was the most comfortable to use—and it's backlit.

The most disappointing remotes are those included with the EZ Pro 550 and the Voyager AV200. Neither features backlighting, both have different button configurations than the projector, and they are the only two remotes that can't control the Mac's mouse.

Macworld's Buying Advice

We have three projectors to recommend: one is our Editors' Choice and the other two get special mention for distinctive reasons. Sharp's XG-NV1U won hands-down overall for its great image quality, small size, good sound, easy-to-use controls, and great remote with laser pointer. NEC's MultiSync MT810 is also a stable performer that's the easiest to set up, even with Apple's new PowerBooks; you'll carry fewer cables with this model and have the least amount of setup hassle. Vivitek's Voyager AV200 also deserves mention because of its good image quality and built-in TV tuner.

These days, you need to go one step further to impress your audience and keep its attention—without stressing yourself out in the process. Today's lightweight multimedia LCD projectors let you impress with great image quality and easy setup, at reasonable prices. **m**

Macworld Lab director JEFF PITTELKAU covers display technology.

EDITORS' CHOICE

★★★★ Sharp XG-NV1U The best all-around combination of image and sound quality, compact size, easy setup, and ease of use. Elegant remote includes laser pointer. **Company:** Sharp Electronics (201/529-8200, www.sharp-usa.com). **List Price:** \$6,995.

REAL PRODUCTS REAL RATINGS

Reviews you can trust Macworld rates only final shipping products, not prototypes. What we review is what you can actually buy.

Maximum Mac Resolution (h × v, in pixels)	Mouse Control on Remote	Lamp Type	Lamp Life (in hours)	Extra Lamp Included	Replacement Lamp Cost
1,152 × 870	●	metal-halide	2,500	○	\$499
832 × 624	○	tungsten-halogen	70	3	\$49
simulated 832 × 624	○	metal-halide	1,000	○	\$295
1,024 × 768	●	metal-halide	2,000	○	\$400
1,024 × 768	●	metal-halide	2,000	○	\$495
1,024 × 768	●	metal-halide	500	1	\$299
1,024 × 768	●	metal-halide	2,000	○	\$350
1,280 × 1,024	●	metal-halide	8,000	○	\$450
832 × 624	●	metal-halide	2,000	○	\$399
832 × 624	●	metal-halide	2,000	○	\$318
832 × 624	optional (\$145)	metal-halide	2,000	○	\$345

ONCE YOU OUTGROW *zip*, AVOID THE *rip*.



Dyna
MO₆₄₀

WE'LL PAY YOU \$150 TO
UNZIP YOURSELF.

Just buy a DynaMO 640 before
March 31, 1998, and send us your
old Zip drive. Call, or visit our
website for details.



If your Zip can't keep up with your appetite for more capacity, it's time for an upgrade. Not to Jaz, but to DynaMO 640. It's less than one-third the cost of Jaz media*, with a 640MB cartridge costing just \$20. A figure that's even more remarkable when you consider all the things DynaMO 640 has over Jaz. It's more durable, you get free tech support, and you can save your work on different capacities ranging from 128MB to 640MB. And with our No Excuses™ policy, if anything goes wrong during the warranty period, you'll get a replacement drive in two business days. All of which means once you outgrow Zip, there's absolutely no reason to take up Jaz. For more details on DynaMO 640, call, or visit our website.

FUJITSU

(800) 462-0273 www.fcpa.com

©1997 Fujitsu Ltd. All rights reserved. Fujitsu and the Fujitsu logo are registered trademarks of Fujitsu Ltd. No Excuses is a trademark of Fujitsu Computer Products of America, Inc. Mail your Zip drive, DynaMO 640 original sales receipt, original UPC code and serial number to Fujitsu Computer Products of America. Promotion dates: 11/1/97 through 3/31/98. All other trademarks mentioned herein are the property of their respective owners. *PC Magazine Online 10/2/97.

Circle 202 on reader service card

Secrets

Placing It in the Right Context

CONTEXTUAL MENUS MAKE ROUTINE TASKS FASTER AND MORE CONVENIENT

by Ted Landau

You're missing out on one of OS 8's best features if you're not using Mac OS 8's contextual menus. Try this: in the Finder, point the cursor to the desktop background. Hold down the control key, and a tiny picture of a menu appears next to the cursor arrow. Now hold down the mouse button, and a contextual menu pops up that includes most of the options found on the Finder's View menu plus a Change Desktop Background option (a shortcut for opening the Desktop Pictures control panel).

The items listed on contextual menus vary according to the context. For example, Change Desktop Background appears only when you control-click on the desktop background. When you access the contextual menu for a folder or file icon, you'll see a selection of items (such as Open and Get Info).

With contextual menus, finding an alias's original file just got easier. Prior to Mac OS 8, to locate the original file for an alias, you opened the alias's Get Info window and clicked on the Find Original button. With OS 8, the contextual menu includes a Show Original command.

Stalled at the Starting Gate?

Contextual menus are easy to use, but for them to work, you need (surprise!) the Contextual Menu extension to be installed. The extension is installed as part

of the Mac OS 8 Easy Install, but it is not installed if you use the Core System Software Custom Install. And because the extension is not listed anywhere in the Custom Install window, there is no way to individually add it; you must use either the Easy Install or the "full" System Software Custom Install.

To use contextual-menu plug-ins (we'll talk more in a moment about what these are), you must install the SOMobjects for Mac OS extension in your

Extensions folder. SOMobjects is included as part of OpenDoc and many third-party contextual-menu plug-ins.

If you display any Finder icons as buttons (by selecting As Buttons from the View menu), remember to click on the name of the icon, not on the button icon itself, to access its contextual menu. Clicking on the button icon launches the item.

continues



Internet Address Detectors

Contextual menus save you time by eliminating back-and-forth trips between an icon and the menu bar. But the best thing about contextual menus is that they can be extended.

If you spend time on the Internet, your first contextual-menu plug-in should be Apple's Internet Address Detectors (IAD). It's free from Apple's



FinderPop Control-click on an open window, and you'll get a contextual menu similar to this one. FinderPop is a freeware contextual-menu extension.

Web site (http://applescript.apple.com/data_detectors/add.03.html). Once it's installed, open a text document that includes URLs for Web sites, FTP sites, or e-mail addresses. Highlight the text that includes one or more of these URLs (the highlighting is essential). Control-click, and you'll see a list of all the URLs in the selected text. Each URL has a submenu of contextually appropriate options—such as viewing a Web URL from the browser of your choice.

If the IAD software cannot find the browser you selected—for example, if it looks for Netscape Navigator 3.0 and you're using Navigator 4.0—you will get an error message. The solution is simple: from the Open dialog box that appears with the error message, open the appropriate folder and select Navigator 4.0 or the version you're using. The next time IAD looks for Navigator, it will automatically select the correct version.

IAD menus include links to software (such as Cyberdog) you may not have installed. To eliminate unneeded links, open the Apple Data Detectors control panel. The control panel includes a list of "actions" for each application (such as "Open in Cyberdog" and "Send mail with Cyberdog"). Next to each action is a check box. Uncheck every action that contains the word *Cyberdog*, and the items will be banished from the IAD menus.

The Data Detectors control panel is designed to accommodate more than just IADs. Internet Address Detectors is only the first example of a new Apple technology called Apple Data Detectors; expect additional detectors in the future.

Third Parties Join the Party

Shareware authors are leading the way in the development of contextual-menu add-ons. My two favorites are CMTools and FinderPop. True, some of their features do overlap with what other utilities can achieve, but once you get hooked (as I have) on contextual menus, the other alternatives suddenly become less desirable.

CMTools Generally, when you create an alias for a file, you move it to a different location. Selecting the new location means opening several nested folders until you find the one you want. CMTools lets you automatically create the alias and route it to the desired folder.

FinderPop FinderPop is a control panel rather than a contextual-menu plug-in, but it too adds items to contextual menus.

- My favorite FinderPop item is Desktop. It's a hierarchical submenu of all files and folders on your mounted volumes—except for those items on the desktop itself. To open any item in the list, simply select it. A tip: select Show Items on Desktop from FinderPop's More Settings window. This adds the (otherwise omitted) files and folders on the

desktop to the top level of the submenu.

- Make any file an item on your contextual menus by placing the file (or its alias) in the FinderPop Items folder. I used this folder to add StuffIt Expander and DropStuff. Now I simply control-click on the file and select the appropriate StuffIt application from the contextual menu. It's done.

- If you prefer to access contextual menus by just pressing and holding down the mouse button, without needing to press the control key, FinderPop can accommodate you. Simply use the Auto CMM Popup option. You can even set how long the hold delay will last before the contextual menu appears.

Yet More Plug-ins There are several Web sites dedicated to keeping up with the latest in contextual-menu news and software. For a library of freeware and shareware contextual-menu utilities, try CM Central (<http://www.interdesign.ca/cmcentral/>). For frequently updated news on contextual menus, surf over to Control-Click (<http://www.venweb.com/controlclick/>).

Target Practice

Apple's varied success with Mac OS features reminds me of a game of darts. Some (such as QuickTime) hit the bull's-eye. Others (such as publish and subscribe) never stick to the board at all. My prediction: contextual menus are headed for the dead center. **m**

Contributing editor TED LANDAU offers more tips at MacFixIt (www.macfixit.com). He is also the author of *Sad Macs, Bombs, and Other Disasters*, third edition (Peachpit Press, 1997).

Contextual Menus in Applications

CONTEXTUAL MENUS TYPICALLY WORK ONLY IN APPLICATIONS THAT ARE "CONTEXTUAL menus-aware." Unfortunately, little besides the Finder supports contextual menus. So how is it that Internet Address Detectors' contextual menus work almost everywhere? Here's how: the IAD software uses an extension, called Contextual Menu Enabler, that adds this capability to otherwise "nonaware" applications.

Apple says Contextual Menu Enabler is only a stopgap solution. As most applications are rewritten to be contextual menus-aware, the Enabler will not be needed. In fact, the Enabler already deactivates itself in "aware" applications.

In the meantime, a problem can occur if you are using a nonaware application that already uses control-click for some application-specific function. For example, in QuarkXPress, FreeHand 7, and FileMaker Pro 3 (it is fixed in FileMaker Pro 4), with Contextual Menu Enabler installed, a control-click brings up a contextual menu rather than executing the application-specific command. Fortunately, there is an easy workaround: control-double-click (or control-option-click) bypasses the contextual menus and accesses the application's built-in functions. Or a shareware control panel called Internet Address Data Detector (IADD) Picker disables the Internet Address Detector feature for any application you select.

Will this printer
change the
way I work?

Unfortunately yes.
Fortunately better!

Freedom

Flexibility
Size
Affordable
Color
Speed
Efficiency



Big, in-house 'plug & play' inkjet printing. Suddenly design work is brighter, bigger and output faster. Print direct from your Mac for presentations, posters or artwork sign-off. The HP DesignJet 455CA printer and its color management software saves time and money from mistakes at film stage and cuts outsource costs.

Brilliant 4 color 24" x 36" prints in about 18 minutes* onto coated paper. Choose between sheet or roll-feed, matte or glossy paper or film.

More freedom and flexibility, less finance or frustration.

HP DesignJet 455CA

Large-Format Printer

Designed by designers for designers

\$3,195** (24" wide) \$4,195** (36" wide)

Call 1-800-851-1170 for
more information or visit
www.hp.com/go/designjet/455

Circle 11 on reader service card

*Printing in normal mode.

The HP DesignJet 455CA printer includes PostScript Level 2 language-compatible print and color management RIP software for Mac, roll-feed and auto cutter.

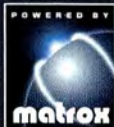
Legs and media bin are an optional extra.

**US list price.

 **HEWLETT®
PACKARD**

Matrox powers your Mac into the next Millennium

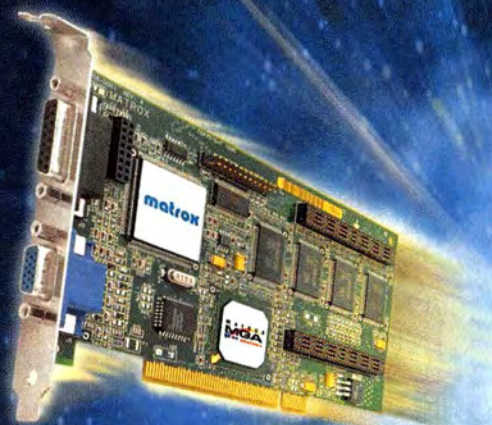
Matrox Millennium II - Superior performance for PCI Macs



Laying out that new ad. Putting together a cool video presentation. Or adding the finishing design touches to a web page. Time is money, and you need your Mac to do it all. Fast. The Matrox Millennium II graphics

accelerator for Mac delivers uncompromising performance for all your professional needs. Quark Xpress, Photoshop, illustrations, and Web designs can be scrolled, zoomed and loaded in a matter of seconds. Its powerful, dual-ported WRAM memory and 250 MHz RAMDAC process true color images with lightning speed. Upgradeable to 16 MB, Millennium II for Mac displays graphically intensive files at resolutions as high as 1920 x 1200 without missing a beat. What's more, with hardware accelerated Quick Draw 3D and a 32-bit Z buffer, you can bring 3D texture mapped graphics into your 2D design applications and manipulate them in real-time. Millennium II for Mac also offers accelerated MPEG1 video playback and support for QuickTime video - making it an ideal solution for watching computer based training videos, CD movies, and educational CD-ROM titles.

With over 300 awards of distinction, Matrox is the leader in designing state-of-the-art graphics accelerators. When choosing an upgrade for your Mac, choose a company you can rely on. Choose Matrox.



Matrox Millennium II for Mac

- Ideal for graphic designers and power users
- Upgradeable to 16 MB of WRAM

\$199 ESP (4 MB)

matrox

1-800-786-9836 <http://www.matrox.com/mga>

Circle 24 on reader service card

INGRAM
MICRO

1-800-456-8000



1-800-999-9382

Tech Data

1-800-237-8931



Tips, Tricks, and Shortcuts

by Lon Poole

Chances are the Back button on your browser gets a pretty good workout when you surf the Web. But if you use Netscape

Communicator or Navigator 4.0, you can

move back and forward more expeditiously than with earlier versions. Instead of baby-stepping backward or forward a page at a time, you can jump between entire Web sites by option-clicking the Back and Forward buttons.

Stefan Anthony, of Yellow Springs, Ohio, discovered that the option key similarly adds functionality to the Back and Forward commands in Navigator 4's contextual menus. For example, if you hold down the option key while popping up a contextual menu (hold down the mouse button with the pointer placed anywhere in an open Navigator window), the menu's usual Back and Forward commands are replaced with Back One Site and Forward One Site. If you use Mac OS 8, control-clicking pops up a slightly different contextual menu; when you control-option-click that menu, its Back and Forward commands also become Back One Site and Forward One Site.

If you don't see Back One Website or Forward One Website, remember you need to visit at least two sites in the current browser window for the commands to be available, as is the case with the usual Back and Forward commands.

Mac & Mic

Q. What is the difference between a PlainTalk microphone and the other kinds of microphones that are available for the Mac? Why can't I use a PlainTalk mic with my PowerBook 1400cs,

even though it has a PowerPC processor and 16-bit sound? Do I have to shut down my PowerBook or my PowerCenter 132 before I can plug in or unplug microphones and speakers?

JENNIFER THACKABERRY
Boulder, Colorado

A. The PlainTalk microphone draws power for its built-in preamplifier through the tip connector of its extralong plug. It works only with Macs whose microphone jack has a matching power



connector for this plug. The PowerBook 5300 and 3400 have this type of plug, but the PowerBook 1400 and 2400 don't. So if you plug a PlainTalk microphone into a PowerBook 1400, the mic won't get power and won't work.

An unpowered microphone, such as the old round Apple microphone that came with the PowerBook 100 series, won't work with any PowerPC Mac—portable or desktop. These computers all require line-level sound input with a 3.5mm-diameter stereo or mono plug. (Line level is the signal strength com-

monly output by CD players, tape decks, VCRs, and other consumer audio equipment.) If you want to use an unpowered mic, you'll need to boost its output to line level with a preamplifier, such as the \$20 NE Mic adapter from Griffin Technology (615/255-0990, www.nashville.net/~griffin/mic_main.html).

The PlainTalk microphone also differs from many other microphones in that it's unidirectional, meaning it picks up sound only directly in front of it. (This benefits PlainTalk's speech-recognition capabilities.)

You don't have to shut down your computer to connect anything to or disconnect it from the sound in/out jacks—or the modem, printer, or Ethernet ports, for that matter. You *do* need to shut down your computer before changing ADB and SCSI connections (unless you have a hot-swap SCSI adapter), to avoid damaging your computer circuitry.

Desktop Picture Restoration

Q. After reading "The Picture-Perfect Desktop" (*Secrets*, December 1997), I tried out some new pictures and backgrounds on my desktop. The first few pictures worked fine, but then something went awry. Now when I try to open the Desktop Pictures control panel, an error message tells me I can't open it, because it may be in use by another application. Turning off all my extensions didn't work. How can I get my machine to let me change the desktop pictures again?

GREG KNUTZEN
Burlington, Washington

continues

A The Desktop Pictures Prefs file has probably become corrupted. Move it out of the Preferences folder (in the System Folder), and restart your computer. This forces the Desktop Pictures control panel to ignore its old preferences file and create a new one.

CFM-68K Confusion, Mysterious Extensions

Q In December's *Quick Tips* you wrote that CFM-68K 4.0 allows 68K Macs to run Cyberdog and other programs. But the Cyberdog Installer told me that Cyberdog was only for PowerPC computers. I'm confused; which programs will CFM-68K let me run on a 680X0 computer?

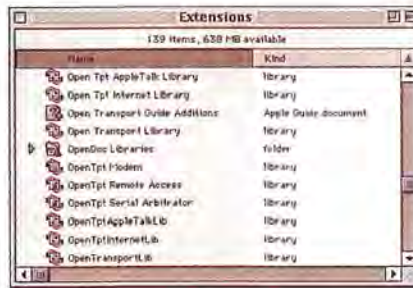
Also, since installing Mac OS 8 I've noticed that my System Folder is crammed full of files with cryptic names such as OpenTptAppleTalkLib. I'm afraid to toss any, for fear I may trash an important file, but I hate the clutter in my Extensions folder. I'd like to know what purpose each file serves, but the Extensions Manager provides only a vague description for most of these files. How can I find out what I can and cannot trash?

MAT EBERHARDT
Hickory, North Carolina

A In answer to your first question, Cyberdog does not require a PowerPC processor; it runs on a 68030 processor or better. On a 680X0 computer with system software older than Mac OS 8 (the CFM-68K functionality is built into the Mac OS 8 System file), Cyberdog requires the CFM-68K Runtime Enabler system extension version 4.0. This extension provides the system software's Code Fragment Manager services for computers with 680X0 processors. These services enable 680X0 programs to share libraries of code fragments, just like PowerPC programs, making it easier to develop software that runs on PowerPC as well as 680X0 computers.

Other software that requires the CFM-68K extension (or Mac OS 8) includes America Online 3.0, Internet Explorer 3.0, Apple Telecom Software 3.0 and later, OpenDoc, and LaserWriter extension 8.4.2 and later.

Some installers, notably the one that comes with Mac OS 7.6, won't let you install Cyberdog on a non-PowerPC computer because when these installers



Extraneous Extensions? You may hate to see them clogging your Extensions folder, but don't trash Open Transport extensions if you have Mac OS 7.6 or later or a computer with PCI expansion slots—these extensions provide Open Transport networking capabilities.

were released, the CFM-68K extension contained a crash-causing bug. This bug is now fixed in CFM-68K Runtime Enabler 4.0, which Apple released separately several months after Mac OS 7.6 and subsequently included with Mac OS 7.6.1 and built into OS 8.

Old installers may let you install old versions of the CFM-68K extension with System 7.5.5 and earlier on 680X0 computers. But a system crash may occur if you use Cyberdog or other software with an old CFM-68K extension.

Concerning your second question, all files whose names begin with *Open Transport*, *Open Tpt*, or *OpenTpt* provide Open Transport networking capabilities. Do not remove these files if you have Mac OS 7.6 or later or if you have a computer with PCI expansion slots. If you have System 7.5.5 or earlier, you can make these files invisible by switching from Open Transport to Classic Networking by using the Network Selector program (in the Apple Extras folder).

You can get descriptions of other System Folder files from Dan Frakes's InformINIT shareware program or his Mac Pruning Pages Web site (<http://cafe.AmbrosiaSW.com/DEF/>); however, neither had been updated for Mac OS 8 at press time. You'll find technical descriptions of Mac OS 8 extensions and control panels in the Mac OS 8 Technical Note (<http://gemma.apple.com/dev/technotes/tntn1102.html>).

QuickTime Shortcuts

TIP Want to hear a QuickTime MIDI soundtrack backward, or view a QuickTime movie backward?

Press ⌘-left arrow while the QuickTime-movie window is active.

ALEXANDRA WERNER
Edmonds, Washington

Also, you can press ⌘-right arrow to play forward, right arrow to step forward, left arrow to step backward, up arrow or down arrow to raise or lower the sound level, and shift-up arrow to raise the sound level beyond its normal maximum. Pressing return or spacebar alternately starts and pauses play forward.

All these shortcuts work with QuickTime sounds and movies you play in a Web browser, using Apple's free QuickTime browser plug-in, and with music and movies you play from a CD or hard disk. A cool place to try out these tricks is the Mouse Jam site (<http://members.aol.com/mousejam/index.html>), where you can make music by playing short music clips along with a rhythm track. (You cannot use these shortcuts on Web pages that play music but do not display the QuickTime controller.)

When playing a QuickTime movie with Apple's MoviePlayer, you can select (or deselect) the part of the movie that's playing by holding down the shift key while playing or stepping forward or backward. You can then use the Cut, Copy, and Paste commands on the selected areas and edit the movie.—L.P.

Blinking "?"

TIP One day my Performa 6500/275 refused to start up, displaying only a blinking question mark. A repair technician told me I would have to reinitialize the hard disk, but I couldn't afford to lose the information on it. I managed to restore the disk without losing any data and also learned that reinitializing the hard disk would not have eliminated the problem anyway.

Apparently the problem began or was aggravated when I upgraded to Mac OS 8 and the installer updated the driver software on my hard disk, providing the potential for a crash. The crash happened weeks later when I routinely turned on the computer.

The solution has several steps: First you need to download Drive Setup 1.3.1 from Apple's Software Library (www.info.apple.com) or order it on disk from Apple Customer Relations (800/776-2333). You also need to download the 1.2GB Firmware Utility

continues

ONE PLANET. ONE CHANCE. TAKE IT BEFORE THEY DO.



DEADLOCK™

PLANETARY CONQUEST



SIX RACES COLONIZE A VIRGIN PLANET. ONLY ONE WILL SURVIVE. BUILD YOUR PROVINCE'S STRUCTURES. CONDUCT RESEARCH TO ADVANCE YOUR RACE. DEVISE THE PERFECT STRATEGY OF DIPLOMACY, INTIMIDATION AND WARFARE TO ENSURE YOUR SURVIVAL. PLAY AGAINST THE COMPUTER OR A LIVE OPPONENT IN THIS INNOVATIVE TURN-BASED STRATEGY GAME.

"Absorbing Gameplay"
-Next Generation

"Deep, rich...one of the best
conquer-the-planet strategy games
in years. Editor's Choice"
-PC Gamer

"Sim City on Steroids"
-Computer Life

800-229-2714

Call for a free catalog or visit our
website at www.wizworks.com

ACCOLADE



"...richly developed backgrounds of the alien races and the thoroughly
refined technology give this game a personality all its own."

-Computer Gaming World

MacSoft®

An Affiliate of GT Interactive Software
2300 Berkshire Lane, Plymouth, MN 55441 612.509.7600

Deadlock is a trademark of Accolade, Inc. Apple, Macintosh, and MacOS are registered trademarks of Apple Computer, Inc. All other product names are of their respective owners. Published under license by Accolade, Inc. ©1997 Accolade, Inc. All rights reserved.

Circle 29 on reader service card

1.1 and Apple's Disk Copy application (version 6.1 or later) from Apple's Software Library.

Use Disk Copy to make floppy disks for the Drive Setup 1.3.1 and Firmware Utility 1.1 disk-image files. Then start up from the Disk Tools floppy that came with your system-software-installation kit or Mac OS-installation CD-ROM. Follow the instructions that come with Drive Setup 1.3.1 and Firmware Utility 1.1 to update your hard disk.

These steps alone, however, did not restore my hard disk. I restarted my system using Norton Utilities and ran Disk Doctor to repair the corrupted hard-disk directory.

BETTY ETZLER
Roanoke, Virginia

There are actually many causes for the blinking question mark on start-up. Drive Setup 1.3.1 fixes a problem caused by updating an IDE hard disk with Drive Setup 1.3 or the Mac OS 7.6.1 or OS 8 installers. (You can prevent the Mac OS 8 installer from updating the driver by clicking on the Options button at the bottom of the Install Mac OS 8 window and then turning off the Update Apple Hard Disk Drivers option.)

Apple says this problem affects the Performa and Power Mac 5400, 5500, 6400, and 6500 series. By omission, Apple implies that the problem does not affect PowerBooks with IDE drives, but it's not clear why it wouldn't. The problem may also affect the IDE hard disks of Mac clones, since Drive Setup 1.3 reportedly works on them. The bottom line is that every time you let the Mac OS 7.6.1 or 8.0 installer update the driver on a computer with an IDE hard drive, you should use Drive Setup 1.3.1 to update the driver again.

The 1.2GB Firmware Utility 1.1 fixes a different problem that supposedly affects only some 1.2GB IDE drives in Performa 5260 and 6360 computers, and then only intermittently. The utility should have no effect on other computers.

*Disk-repair utilities, such as Symantec's Norton Disk Doctor and Apple's free Disk First Aid, can sometimes fix disk problems that prevent the Mac from finding or mounting the start-up disk. To troubleshoot the many other causes of a persistent blinking question mark at start-up, I recommend Ted Landau's book *Sad Macs, Bombs, and Other Disasters*, third edition (Peachpit Press, 1997), and Landau's *MacFixIt Web site* (<http://macfixit.pair.com>).—L.P.*

More Cross-Platform Names

TIP I was reading *Quick Tips* in your December 1997 issue and came upon C. S. Chow's question about maintaining long file names when transferring files between a Mac and a Windows 95 or NT machine. I regularly use PKZip, from PKWare (414/354-8699, www.pkware.com), with Windows 95 or NT to zip all the files I want to transfer to my Mac. Once they're on my Mac, I simply unzip them with Aladdin Systems' free StuffIt Expander (408/761-6200, www.aladdinsys.com). The long file names are preserved without any truncation or random generation of cryptic names.

Inversely, I use the Mac shareware ZipIt to zip all the files I need to transport. When I unzip them on a Wintel machine, the file names are preserved.

SCOTT GIRVAN
Victoria, British Columbia, Canada

Repeating Field Import/Export

TIP I recently needed to import data into a repeating field in Claris FileMaker Pro 3.0. After experimenting a little, I found a way to get the job done.

The key is that FileMaker uses the character whose ASCII code is 29 to separate values in a repeating field when exporting or importing. Knowing this, you can use Microsoft Excel or a comparable application to prepare data for importing into FileMaker. A simple formula links all the values for a repeating field, separating the values with ASCII code 29, as in the following example:

=value1 & Char(29) & value2 & Char(29) & value3

In this formula, **value1**, **value2**, and **value3** are either three values to be imported into one repeating field or references to cells containing the three values. You can extend this formula to include more values for the repeating field. The result is a single spreadsheet cell that contains all the values for a repeating field, with ASCII code 29 between consecutive values.

You can then save the spreadsheet as a text file and import it into FileMaker. In FileMaker's Import dialog box, you see only the first value for the destination repeating field, but the repeating

field will have all the values when FileMaker finishes importing.

In a similar manner, you can take values exported from repeating fields and segregate them into columns in a spreadsheet. Simply use a word processor to replace every instance of ASCII code 29 with a tab.

JOHN DORMAN
Holland, Michigan

Dead Clock Battery, Dead Screen

After reading about replacing the computer's clock battery in December's *Quick Tips*, several readers, including Keith Schmude of Wilmington, Delaware, wrote to tell users that a dead clock battery may leave you with a dead screen at start-up if you have a Power Mac 6100, similar Performa, or Quadra or Centris 660AV or 840AV. When the clock battery dies, there is no video-out, so nothing will register on your screen. Save yourself a nasty surprise by replacing the clock battery when the clock starts acting flaky.

Correction

Due to a misplaced comma, December's *Quick Tips* incorrectly states that the File Sharing control panel is not needed in Mac OS 8. Actually, you can't share files without this new control panel. It replaces the File Sharing Monitor control panel and the Sharing Setup control panel, which are normally removed by the Installer program when you upgrade to Mac OS 8. **m**

LON POOLE answers readers' questions and selects reader-submitted tips for this monthly column. His latest book is *Macworld Mac OS 8 Bible* (IDG Books Worldwide, 1997).

Shareware mentioned in *Quick Tips* is available from Macworld Online (www.macworld.com) or America Online (keyword Macworld; use keyword Apple for Apple software).

We pay \$25 to \$100 for tips on how to use Macs, peripherals, or software. Please include your full name and address, so that we can send you your payment. Send questions or tips to quicktips@macworld.com or to Macworld Quick Tips, 501 Second St., San Francisco, CA 94107. All published submissions become the sole property of *Macworld*. Due to the high volume of mail received, we cannot provide personal responses.

**MARVEL
INTER
ACTIVE**

X-MEN THE RAVAGES OF **APOCALYPSE** A **QUAKE**® TOTAL CONVERSION



Battle Using the Full Array of Weapons, or Fight the X-Men using each Character's Unique Power



Eight New Weapons, Plus 24 X-Men Superpowers



Two Riveting Single-Player Episodes and Four Multi-Player Levels



Incredible New X-Men Graphics

**THIS IS NOT THE GAME OF QUAKE® YOU ONCE KNEW.
THE X-MEN HAVE TAKEN OVER. NOW IT'S A WHOLE NEW GAME.**

This product is in no way affiliated with, nor will it be supported by, Id Software, Inc.

800-229-2714
Call for a free catalog or visit our website at
www.wizworks.com

MacSoft®

An Affiliate of GT Interactive Software Corporation

©1997 Marvel Characters, Inc. All rights reserved. Marvel Interactive, X-Men, all Marvel character names and the distinctive likenesses thereof are trademarks of Marvel Characters, Inc. and are used with permission. Quake® is a registered trademark of Id Software, Inc. All rights reserved.

Circle 28 on reader service card

I am...

Discover Creator2, drawing and page layout software made expressly for designers. This streamlined software is tailored to the way you work, providing the freedom to tinker, rearrange, and adjust your designs to achieve the perfect look. There's no learning curve, no software adjustment period, no wading through features designers never use. Just your creativity and Creator2's powerful drawing, layout, image-handling, trapping, and typography controls.

therefore I create.

With the ability to include multiple page sizes in a document, view and edit separated graphics within the application, and use both text and image style sheets, Creator2 is ideal for ads, brochures, annual reports, packaging, letterhead, and other graphic arts collaterals. And, Creator2 is customizable so you can add capabilities specific to your workflow.

Creator2 lets you do what you do best. **Design.**

To learn more about Creator2 call 1-800-245-9278
or visit <http://creator2.multi-ad.com>

M U L T I - A D
CREATOR2
The Next Generation Design Tool



Multi-Ad Services, Inc. • 1720 W. Derweiller Drive • Peoria, IL 61615-1695 • Phone (309) 692-1530 • <http://www.multi-ad.com> ©1997 Multi-Ad Services

Circle 187 on reader service card

Powerful Teamwork: AppleScript and QuarkXPress

The Lazy Way to Working Harder

by David Blatner

Sometimes it pays to be lazy. That urge to goof off forces us to work smarter, finding techniques that cut corners but not quality and that cut time from our workdays instead of our weekends. One of the best examples of working lazy is letting your computer do your job for you, especially when it comes to performing mind-numbing, often-repeated tasks. After all, these are the kinds of chores computers excel at.

One of my favorite ways to automate tasks in QuarkXPress is to script them by using Apple events. Apple events provide a way for one program to control another behind the scenes, like a puppeteer pulling the strings of a marionette. In other words, you can write and execute a script in one program, and that script can manipulate any other program that supports Apple events. XPress is one of the best examples of a scriptable program, because there are so many "strings" you can pull and so many cool things you can do with it.

For example, pull the right string, and XPress creates a new document. Pull a different string, and XPress places guides at specific locations on your page. Pull another one, and XPress automatically builds a catalog based on information in a Claris FileMaker Pro database. The sky's the limit when scripting XPress.

In this article, I take a look at how to write a few small scripts that make QuarkXPress perform tricks that are either a pain—or just plain impossible—to do manually.

Macros versus Scripts

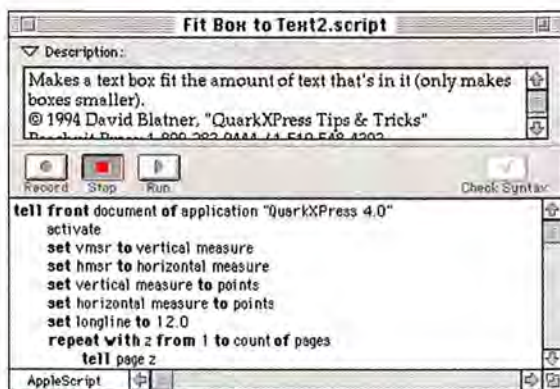
People often get confused between scripting and building macros. Here are three differences: First, where macros automate particular tasks that you can also perform manually (select that menu item, click on that button, type such and such, and so on), scripts let you sneak in the back door of the program and control it from behind the scenes. Scripts often let you do things you couldn't pull off with the program's regular interface. Second, scripts have flow control, such as conditional branching and looping. Third, scripts let you retrieve information from the program. (For example,

you can say, "Find out how many pages there are in the document, and then put that number in a text box on page 1.")

In general, while macros are great, you can do much more with scripting. I have scripts for changing the horizontal scale of every em dash in a document to 75 percent; for changing every instance of 1/2 to a proper ½; for copying guides between documents; for importing and exporting text from multiple text boxes at a time; for . . . well, you get the idea. If I find myself pounding my head against my computer monitor, I think, "There's got to be a script that will do this faster."

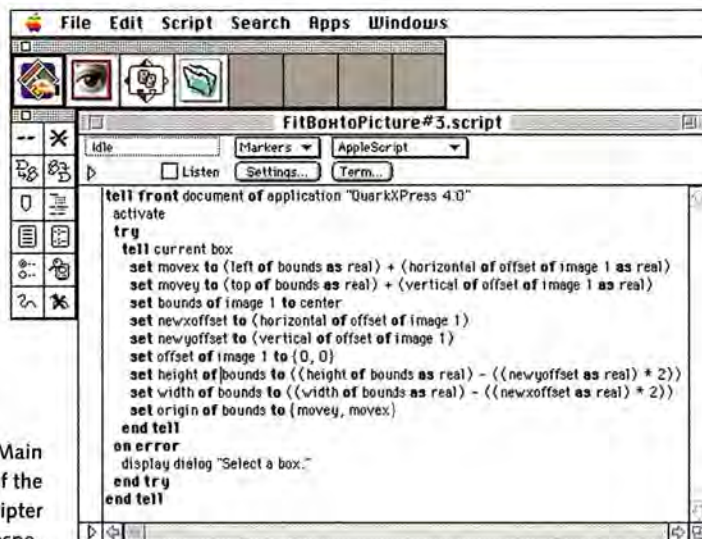
continues





Simple and Complex Scripters

Apple's free Script Editor (left) and the \$199 Scripter (right), from Main Event Software (202/298-9595, www.mainevent.com), are two of the most convenient programs in which to write and run scripts. Scripter gives you much (much!) more functionality than Script Editor, especially when it comes to debugging and writing complex scripts.



Tools of the Trade

While there are several ways to write scripts, I prefer the computer language AppleScript. Fortunately, writing in AppleScript isn't like programming in C++ or some other complex language. Apple based AppleScript on natural language, so while you still need to learn some special words and syntax, you can write phrases in your script that sound pretty close to English, such as **set the color of text box 1 to "Cyan"**.

The easiest way to get started creating these scripts is to try out Apple's free Script Editor program (it usually sits in a folder called Apple Extras on your start-up disk). When you're ready for more-advanced scripting, there are commercial programs that offer more features (see "Simple and Complex Scripters").

Talking to Objects

AppleScript is built on the idea that scripts talk to objects in the program you want to automate. You should always begin by defining whom the script is talking to. For example, the first line of an XPress script is usually **tell application "QuarkXPress™"**.

(The program's name must appear between quotation marks and must exactly match your copy of XPress so that Script Editor knows what program you're referring to. An easy way to ensure this is to copy the file name from your version of XPress and paste it into your script.)

Once it has XPress's attention, your script can talk to *objects* within XPress:

specific documents, pages, text boxes, picture boxes, words in a story, and so on. Each object has properties that describe it. For instance, one of the properties of a picture box is its *color*. Another property is its *rotation*. AppleScript lets you easily create objects and change the properties of objects on your pages.

To figure out what the proper names of objects and properties are, you need to view XPress's AppleScript dictionary. Each of the various scripters has in-software methods for doing this (in Script Editor, select Open Dictionary from the File menu).

If you're going to script QuarkXPress, you should also check a document called For Advanced Scripting (it usually gets installed in your QuarkXPress folder and is on the original install disks). Find this file, open it in XPress, and print it out. You'll need a big stapler to fasten all the pages together, but it's really worth having it printed, because you'll refer to it constantly when scripting. Without the information in the document and the dictionaries, it's impossible to know that a line in XPress is actually called a *line box* or that vertical and horizontal guides have a property called *unmoveable*, which locks them in place (a good example of something you can do via a script that you cannot do manually in the program).

One of the most frustrating things about scripting is that you have to precisely define which objects to manipulate. If you're trying to set the color of the fourth word in a paragraph, you may

need to specify that it is **word 4 of paragraph 1 of story 1 of text box 1 of current page of front document**.

Start Stealing Scripts

Does the whole thing sound daunting? Do you feel the urge to run out to get a book on scripting? Don't. Ultimately, the best—and easiest—way to learn scripting is to steal other people's scripts. The Internet is a good place to hunt (surf over to www.applescript.apple.com or www.xpressobar.com/script.html to load up on information about scripting and scripting resources).

The trick is to find a script that does a procedure similar to the one you want to do; open the script, and see how it works. Often, you can just adapt a script for your own uses (however, some scripts are copyrighted, so you may need to get permission). Sometimes you will be able to find an even better way to script a procedure after playing with someone else's script for a bit.

If purloined scripts aren't meeting your needs, you might turn to books. I recommend *Danny Goodman's AppleScript Handbook* (Random House, 1995)—which unfortunately is out of print, so you'll have to find a copy in a used-book store. I also discuss scripting XPress in more detail in my book *The QuarkXPress Book* (Peachpit Press, 1994 and 1998).

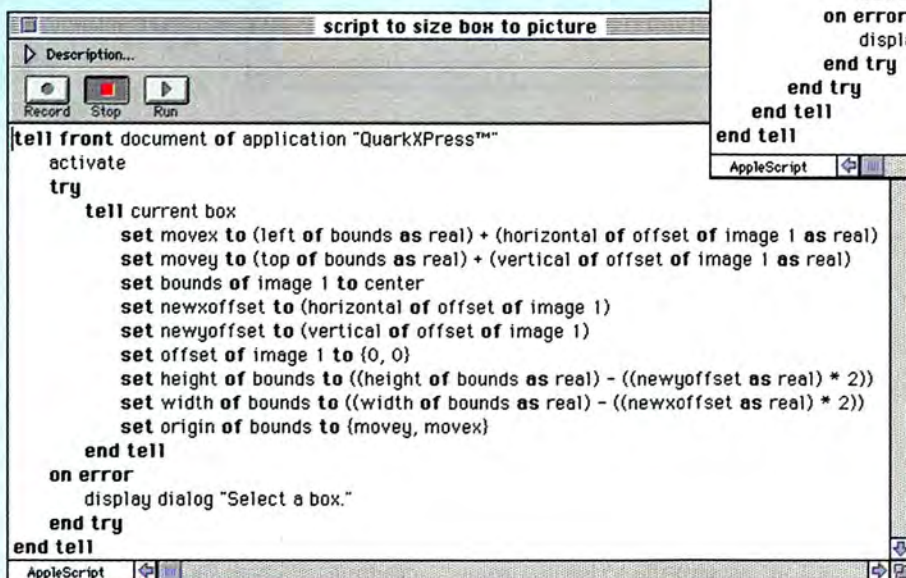
One more way to get a leg up in scripting XPress is to use the \$149 ScriptMasterXT, from Street Logic Software (619/654-3333, <http://pacific-coast.com/StreetLogic/>). ScriptMasterXT is an

Three Cool Scripts

Since the best way to learn scripting is by looking at other people's work, I have created three little scripts that you can peruse and adapt to your own uses. Note that these scripts don't necessarily offer the most efficient way to perform the tasks (see if you can find better ways yourself). You can save yourself some typing by downloading the scripts from www.macworld.com/more/. Just be sure to change the name of the program to match your version of XPress exactly.

1 Add a Graphic

For those who need to add their company's logo to every document they create, the script above automates adding a graphic.



3 Let the Box Fit the Picture The script above sets the size of a picture box to be exactly the same size as your picture (you can't do that in QuarkXPress without an XTension). This is a more advanced script, but it works!

XTension to QuarkXPress that makes the program recordable. That is, you can draw a box in XPress and then see what the proper AppleScript command is to draw that box—it effectively converts real actions into scripts.

Your First Script

Let's dive in and build a script to control QuarkXPress. Once you have QuarkXPress and the Script Editor running, type the following into a new Script Editor document:

```

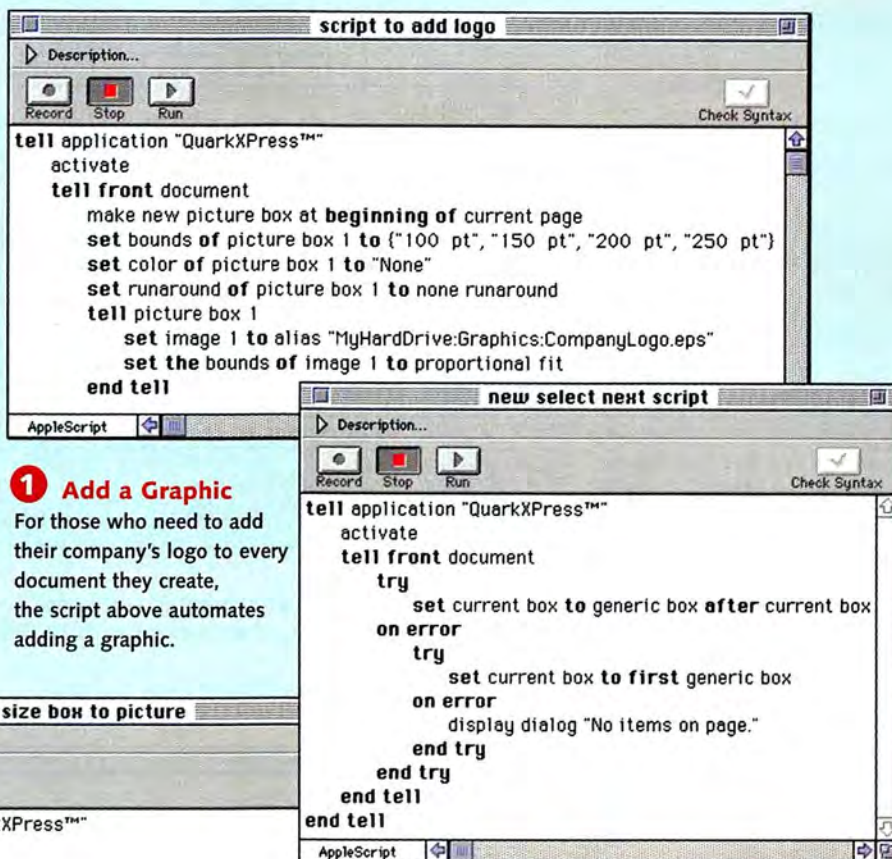
tell application "QuarkXPress@"
    activate
    tell front document
        set the width of every line box whose width is "1 pt" to ".5 pt"
    end tell
end tell
    
```

OK, let's look at what this does. The first line tells AppleScript which program to control: QuarkXPress. The second line, **activate**, tells XPress to become active; that is, it becomes the frontmost application

(note that this line is optional; you can run scripts while XPress is hidden—although it must be running). Next, the script specifies which document AppleScript is talking to.

Now we get to the meat of the script: the **set** command, which lets you change the properties of an object. In this case, the object is any line whose width is currently 1 point. The **~** character at the end of the fourth line tells Script Editor to read the next line as part of the same com-

continues

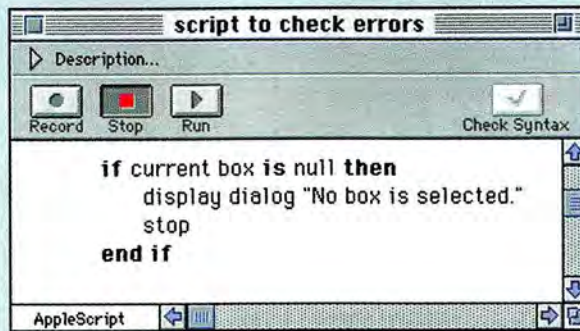


2 Select the Next Box

People keep asking me for a keystroke that selects a box behind or in front of the one currently selected on the page. There isn't one, but the quick script above lets you do just that. Note that it makes the most sense to run this kind of script via a keystroke; I use CE Software's QuickKeys to trigger this script.

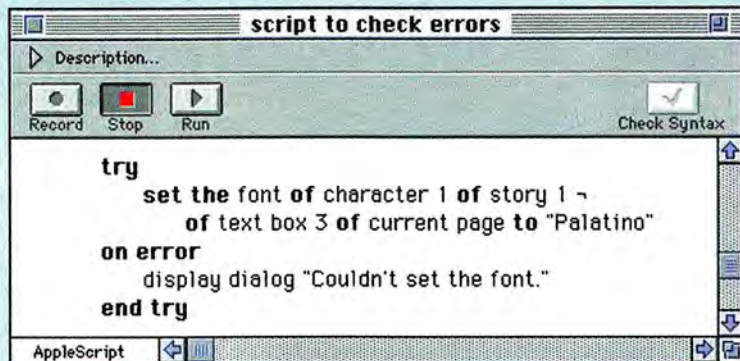
Checking for Errors

Most scripts require a setup—that is, QuarkXPress has to be in a certain state for the script to work. Some scripts won't run unless a box is selected; others require a document to be open or a word to be highlighted. If the condition isn't met, you'll get an error message when you try to run the script. AppleScript has several methods for dealing with errors. Here are two common error tests to add to your scripts.



If Command

One easy addition to a script is the if command. For a script that requires a box to be selected, you could add the above snippet somewhere near the beginning of your script.



Try Command

If an error does occur between the try and the on error commands, the commands after on error will be executed; otherwise, the script will just skip them.

mand, as though there were no new line (to get the ~ character, press option-L).

Finally, anytime you start talking to an object (or a program), you have to let it know when you've finished talking to it. You do that with an **end tell** statement. (Note that there are two **tell** statements, so there have to be two **end tell** statements.)

Now, was that so hard? After writing the script in Script Editor, just click on the Check Syntax button (or press enter). If you made any typos, you may get an error at this point. Otherwise, Script Editor will format your script and you'll be

able to click on the Run button to execute the script. Of course, you must have a document open in XPress and there must be at least one line in the document that is 1 point thick, or you'll get an error (see "Checking for Errors"). Now you can save your script as a compiled script from the Kind pop-up menu or in the Save As dialog box.

Self-Running Scripts

You can always run AppleScripts from within the Script Editor, but it's a little

annoying to have to open it up when you want to run a script. Fortunately, you can execute your scripts in other ways.

- You can save the script as an application. (Select Save As from the File menu, and choose Application from the Kind pop-up menu; make sure you turn on the Never Show Startup Screen option and turn off the Stay Open option. When you double-click on the script application, the script runs all by itself. Put an alias of the application on your Apple menu for easy access.)

- You can save the script in a compiled format (choose Compiled from the Kind pop-up menu) and run it by using OSA-compliant software (meaning the program can pull Apple event "strings"). For instance, the freeware system extension OSA Menu lets you put compiled scripts on a menu on the menu bar. Simply choosing a script from the menu automatically runs it. Similarly, CE Software's QuickKeys lets you run AppleScript scripts.

- AppleScript add-on programs such as Digital Technology's \$299 FaceSpan (801/226-2984, www.facespan.com) let you build your own user interface for scripts, with pop-up menus, text-entry fields, radio buttons, and more. These FaceSpan files act as applications; you can even build floating palettes that sit on top of the program you're scripting.

Scripting XPress 4

All of the scripts you see in this article will work with either QuarkXPress version 3.32 or version 4. However, at the time of this writing, Quark had still not enhanced QuarkXPress's scripting functions to include most of the new features in version 4. For instance, there is no scripting control of Bézier curves, character styles, text to box, and so on. Of course, there's little doubt that Quark will correct this omission in the not-too-distant future, but in the meantime, you will simply have to limit yourself to scripting the familiar features of version 3.32.

Automated Futures

There's no doubt that scripting is programming; it can be confusing and difficult at first. And yet, AppleScript is truly programming for the rest of us and it offers very powerful tools for very little effort. You should take the time to learn a little scripting today so you can let the computer do the grunt work. You'll gain much more time to be lazy in the future. **m**

DAVID BLATNER is the founder of moo.com consulting and the author of *The QuarkXPress 4 Book* (Peachpit Press, 1998) and *The Joy of Pi* (Walker and Company, 1997). You can reach him at david@moo.com.

Bookmarks

Digital Technology
www.facespan.com

Main Event Software
www.mainevent.com

Street Logic Software
<http://pacific-coast.com/StreetLogic/>

REAL POOL™

There's nothing virtual about it.



Actual Screen Shots

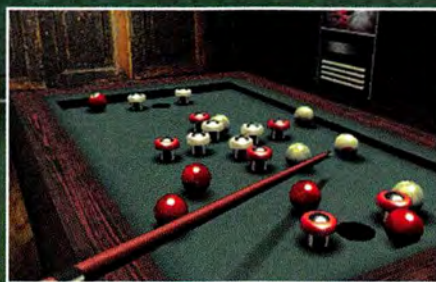


Photo-Realistic 3D in Real Time

Includes these Real Pool games:

**Bumper Pool • 8-Ball • 9-Ball • Rotation
Straight • Spanish • Many more!**

Play against the computer or challenge and chat with your friends over the Internet.

Created by



Available at Retailers Everywhere!

800-229-2714

Call for a free catalog or visit our website at www.wizworks.com

System Requirements: Any Power Macintosh with at least 16MB RAM, color monitor and CD-ROM drive.

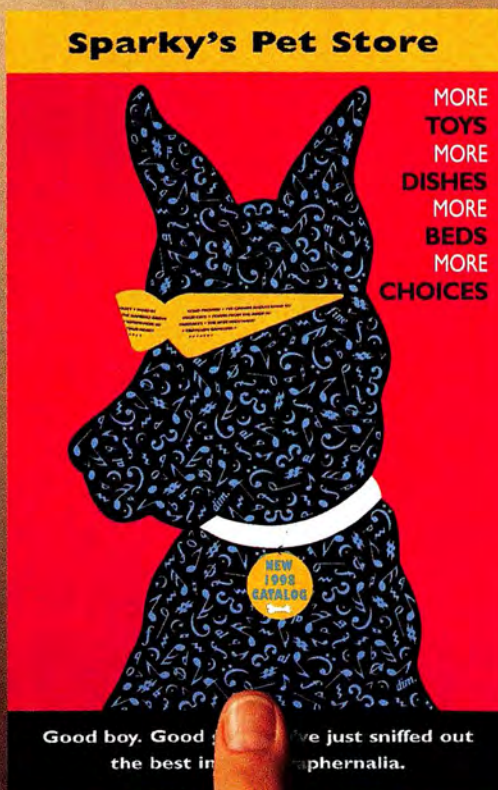
©1997 Digital Fusion, Inc.

MacSoft®

An affiliate of GT Interactive Software Corporation
2300 Berkshire Lane No., Plymouth, MN 55441 • 612-509-7600
Call for a free catalog or visit our website at www.wizworks.com

Circle 25 on reader service card

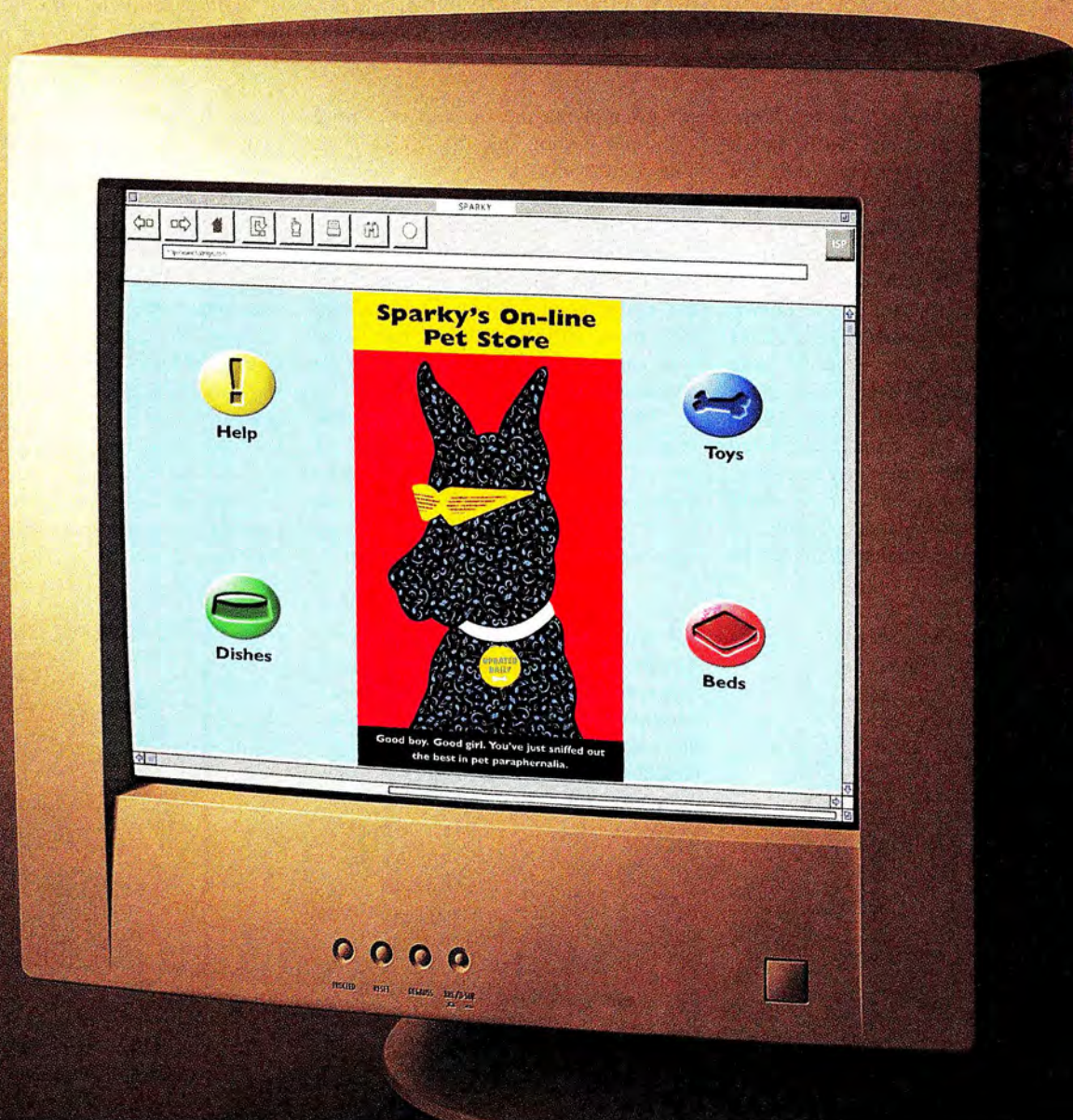
11:00



Care to see that again?

Considering how time-consuming cross-media publishing can be, you may not believe the speed of Adobe® PageMaker® 6.5 software. Fast. Easy. Intuitive. From paper to HTML.

11:06



To Acrobat PDF. To CD. It runs across media like a puppy
across a playground. End result, you fetch more results.
Contracts. Profits. So blow your dog whistle and call us.

1-800-422-3623 or www.adobe.com.



Circle 253 on reader service card

Harnessing the Power of Photoshop's Distort Filters

How You Apply Them Makes All the Difference

by Cathy Abes

Many of Adobe Photoshop's Distort filters will generate different effects depending on whether you apply them to a selection, to an entire object, or to an entire layer. Digital illustrator David Peters has spent many hours experimenting with these filters to produce a wide range of interesting effects for his offbeat photo-collages. For example, he's found that applying a distortion filter to a selection rather than to the entire layer tends to produce weird effects, especially along the selection's edge; therefore he

advises applying the filter to the entire layer and cutting out the object later. The result will look more like what you see in the Preview window.

Whereas some filters, such as the Pixelate filters, affect the entire canvas, the Distort filters affect only the object, not the entire blank canvas. Consequently, with most distortion filters, the larger your canvas, the more control you have over the effect.

A filter can also produce radically different results depending on *how* it's applied. Try reapplying it to the same image, applying it to an image to which you previously applied a different filter, or applying it to only a part of the image.

If you don't like the initial effect you get from a filter, keep experimenting with it; eventually you may get the results you're after.

This experiment with distortion filters began with a scanned photo of a painting of a clown head. Peters first tried the Pinch filter and then Twirl, but eventually decided that several applications of Pinch alone would produce the effect he wanted.

To create the swirling sky effect, Peters used a combination of Polar Coordinates and Twirl. He used Wave to create the winding road and the curving soda bottle. **m**

DAVID PETERS is a digital photo-collage illustrator whose clients have included *Air & Space/Smithsonian*, MetroLink, and *Home PC*. He also teaches digital illustration at Otis College of Art and Design in Los Angeles.

Senior associate editor CATHY ABES covers graphics for *Macworld* and is the author of *Photoshop F/X* (Ventana Press, 1994).

1 The original scanned photo of the clown-head painting.



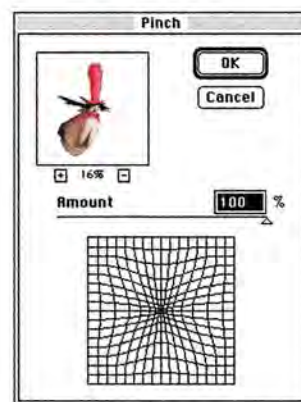
2 A filter applied to a layer can have a different effect than one applied to a selected object; the object's shape can also influence the effect. For best results, apply the Distort filters to a layer; otherwise you can get unwanted artifacts around the edges.



Twirl applied to a selection containing just the head caused ghosting around the hair and the hat.



There's no ghosting when applying Twirl to the entire layer.



The Preview window shows the potential effect of the filter application. Photoshop's previews default to 100 percent (typically showing just part of your image). It's helpful to preview a reduced image. Click on the minus sign until the whole image appears.



3 To create an elongated shape, Peters applied the Pinch filter at 100 percent to the entire layer rather than just the head (left). Next he applied Pinch again at 100 percent, which made the face pucker while stretching the outer areas (right).



4 Before applying Pinch a third time, Peters tried for an even more exaggerated effect by making a horizontal elliptical selection of just the face (top). Applying Pinch at 100 percent to the selected area produced too much of a distortion (bottom), so Peters went back to the previous version.



5 The irregular 40-pixel feathered selection of the sky was taken from one of Peters's own photos.



6 The sky selection took on a U shape after Peters applied Polar Coordinates using the Rectangular to Polar setting.



7 Reapplying Polar Coordinates, this time with the Polar to Rectangle setting, created an inverted crescent. Applying Polar Coordinates to a copy of the crescent with the Rectangular to Polar setting resulted in a wider version of the U-shaped sky. Finally, Peters applied Twirl to both shapes at a -869-degree angle to create a vortex spiral.

Microtek Makes Film Scanning "Pane-less."



STEP UP TO  MICROTEK

FEATURES

Every once in a few years an innovation comes along that rocks the scanning industry. Microtek's engineers and color scientists have been responsible for so many of them. And now, they've done it again.

We call it E.D.I.T.™ or *Emulsion Direct Imaging Technology*.™ With E.D.I.T. you can actually capture a scanned image from a transparent original without an interfering pane of glass.

E.D.I.T.™

Instead of a conventional transparent media adapter, your film is placed into one of five holders (*SnapTrans™ Templates*). A template snaps into a tray and which is then inserted into the scanner (like the new high-resolution *ScanMaker® 5* color flatbed scanner shown above).

The benefit to you? No refracted light diminishing the values of your original. No "Newton-rings" either — those annoying concentric circles that appear in scanned images when film is sandwiched between two panes of glass.

Of course, these are just two of the benefits you'll experience with the new *ScanMaker 5*. We haven't even talked about the superb reflective scans you get, or the single-pass speed, or the great bundled software, or Microtek's award-winning *ScanWizard* software...

- Microtek's patented E.D.I.T.™ (Emulsion Direct Imaging Technology™ — U.S. Patent No. 5,574,274)
- Full 36-bit input/output (in "Billions of Colors" mode)
- 1,000 x 2,000 dpi optical resolution / 8,000 x 8,000 dpi enhanced
- 5 SnapTrans™ templates for film stocks from 35mm to 8" x 10"
- Solid stainless steel chassis
- 3 long-life cold cathode lamps
- Precision-machined aluminum optical carriage
- High grade optically flat first surface mirrors yielding 95% reflective light for lower image noise
- Intel® 80186 processor on-board
- Microtek's award-winning ScanWizard scanner controller (featuring batch scanning, descreening, downloadable gamma curves, unsharp masking, exposure control per RGB and more)
- MetaCreations™ Painter™ 5 (Windows or Macintosh models)
- Image-editing and color calibration software with targets

MICROTEK

www.microtekusa.com / 1-800-654-4160

Liven Up Your Site with Chats and Conferences

It May Be Easier—and Cheaper—Than You Think to Create a Virtual Community

by Jim Heid

The Web is the ultimate two-way street. It allows for interaction and the exchange of ideas—not only between site publishers and their visitors but between visitors as well. If your Web site is a one-way affair, you might be missing out on one of the Web's most valuable advantages over other media: having a community.

By setting up a conferencing area or a chat room for your Web site, you can tear down those one-way signs and turn your site into more than just an electronic brochure or soapbox. A company Web site can provide online technical-support forums where customers can get their questions answered by technicians and knowledgeable customers. A school's site can have a place where parents can interact with teachers and with each other. A corporate intranet site can provide an area where employees can ask questions, post announcements, and swap their favorite *Dilbert* stories.

If you'd like to build some virtual meeting rooms for your own Web site, keep reading for the blueprints. Along the way, I'll provide some advice to help you decide what features and products you might need and I'll pass along some tips on customizing your virtual meeting rooms. And here's the best part: it might not cost you a cent. Several commercial Web sites offer free conferencing and chatting engines you can tap into from your own site.

Two-Way Advantages

Whether you've developed a World Wide Web site to market your world-class widgets or an intranet Web site for your department or company, there are a few good reasons to consider adding conferencing or chatting features.

Encourage repeat visits. Conferences and chats can be strong catalysts

for repeat traffic to a Web site because they help build an online community, a place where people of similar interests get together—a place where everybody knows your e-mail address.

Learn about your visitors. By monitoring the discussions in a conference or chat area, you can find out what your site's visitors are most interested in. Knowing this can help you tailor your site's content.

Get free content. Conferencing and chat areas are an ideal source of fresh content for a Web site. Discussion topics that draw heated opinions and thoughtful insights or archives of lively real-time chats are superb additions to any Web site. And the best part is, your visitors create them for you.

Conferencing? Chatting? Or Both?

Conferencing and chatting sound like similar activities, but they're quite different. One of your first steps toward build-

ing a meeting place involves determining which is best for your site—or whether both might be appropriate.

Conferencing areas are like bulletin boards: people can post messages that others can read and reply to at their convenience. A chat room, on the other hand, is a virtual watercooler, a place where people can meet in real time to exchange gossip, pleasantries—you name it. Because it allows for real-time interaction, a chat room can be a lively place—or it can be stone boring. Like any get-together, it all depends on who's doing the chatting.

As any America Online addict can tell you, chat rooms are also ideal venues for special events such as celebrity appearances. You'll have a tough time booking Liz Taylor for your chat room, but you might be able to schedule a chat with someone of importance to your site's visitors: the school superintendent,

continues



Digital Decorating: 4 Ways to Customize Your Meeting Place

Commercial conferencing and chat server software provides customizing features that enable you to tailor the appearance of your meeting place. Take advantage of these fea-

tures to give your conferencing and chat areas the same look and feel as the rest of your Web site. The following examples show a few simple customization tasks you

might perform with Lundeen & Associates' Web Crossing conferencing system. These same basic concepts and techniques apply to other conferencing packages.

1 Add a Greeting and Custom Graphics

One of your first steps should be to fine-tune your conferencing area's opening screen by adding your own greeting and including a custom graphic.

The gateway to Web Crossing customization is its Control Panel screen. To reach it, log in as the sysop of your conferencing area and then click on the Control Panel button that appears. The options on the Control Panel screen enable you to customize Web Crossing as well as back up the conference database and view usage statistics.

HTML for page banner

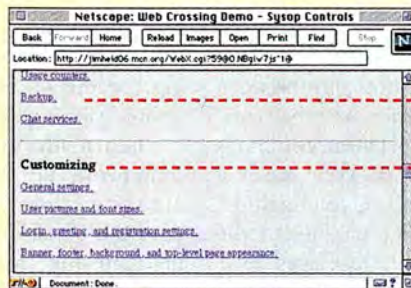
```
</center></a><br>
```

HTML for greeting message

```
<br>
<a href="http://www.acmesystems.com/">Go to Acme Systems Home Page</a>
```

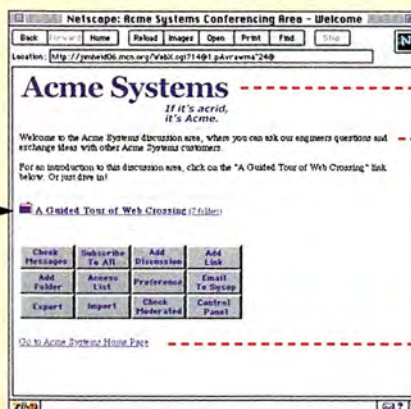
HTML for page footer

```
Welcome to the Acme Systems discussion area, where you can ask our
engineers questions and exchange ideas with other Acme Systems
customers. <br><br>
For an introduction to this discussion area, click on the "Guided Tour
link below. Or just dive in!
```



It's essential to back up your conferences daily.

Customize your conference area's basic appearance.

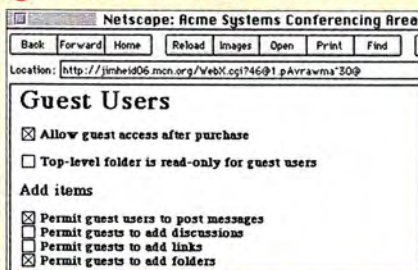


Page banner

Greeting message

Page footer

2 Control Guest and User Access



To encourage visitors to register, you may want to restrict guest access so that guests can browse your discussions but not participate. In Web Crossing's Control Panel screen, click on the Guest Users link and then check and uncheck options as desired.

4 Link to Your Conferences

Once you've created a conferencing area, modify your home page and your site's navigation bar or banner to include a link to the conferencing area.

But don't stop there. An excellent way to draw visitors into a discussion is to include links to specific discussions in relevant places throughout your site. For example, say you've created a travel site that has a corresponding discussion area. At the end of each travel destination page, you might include a link that says something like, "Have you been to Bali? Post your experiences here."

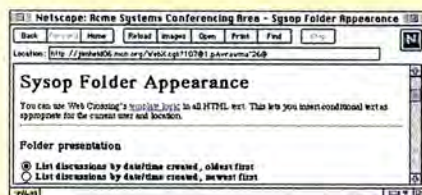
This direct-linking approach snags readers when they're most engaged by a given topic. And by eliminating the need for them to navigate their way to a specific discussion, it increases the odds that they'll participate.

Creating links to a specific discussion isn't exactly straightforward. The problem is, when you create a new discussion topic, Web Crossing and most other conferencing products assign the topics URLs that aren't exactly finger-friendly. (For example, the URL for a specific Web Crossing topic might read <http://www.yoursite.com/WebX713@91.rfxF3.>)

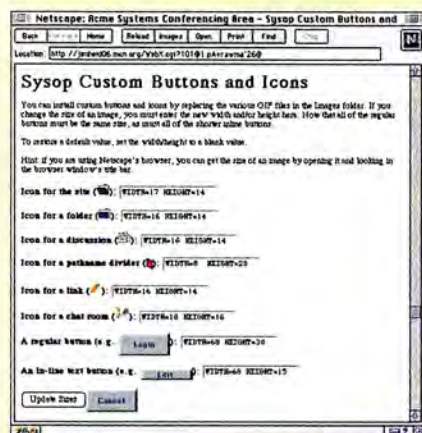
When you want to create a link to a specific discussion topic, follow this procedure: Create your discussion topic and then navigate to it, using your Web browser. Select the topic's URL in the browser's Location bar, and then choose Copy. Now switch to your favorite HTML editor and paste the URL at the appropriate location. The result will be a link that takes visitors directly to the conference discussion that relates to the topic.

2 Customize the Interface

Web Crossing's Control Panel screen also enables you to customize many aspects of Web Crossing's interface.



To customize the way discussion topics are displayed, choose the Folder Appearance option.



To customize the icons and buttons that Web Crossing displays, choose the Custom Buttons and Icons option. **TIP:** If the dimensions of your new buttons differ from those of Web Crossing's default buttons, be sure to enter those new dimensions. That way Web Crossing will display them correctly.



Sometimes just a bit of customization is enough. The New York Times' Forums area uses custom buttons and discussion icons.

the company president, the engineer who designed your widgets.

So conferencing areas allow for a rich give-and-take that people can participate in any time they want to, while chat rooms enable real-time interaction. They complement one another nicely—and that's probably why many sites and commercial online services offer both.

You can, too. There are a couple of routes you can take to add conferencing and chatting to your site; one is a toll road and one isn't.

Commercial Options

The toll road involves buying commercial conferencing software and running it yourself, either on a Web server located on your premises or on an Internet service provider's server. I'm partial to two commercial packages: the \$995 Web Crossing, from Lundeen & Associates (510/521-5855, www.lundeen.com), and WebBoard (\$59.95 to \$349, depending on features), from O'Reilly & Associates (707/829-0515, <http://webboard.ora.com>). For an overview of the kinds of features you'll find in these and other conferencing-software packages, see "Talkin' Features: What You Get with Conferencing Software."

Web Crossing is the only major-league conferencing software available for the Mac OS. Web Crossing runs along with your existing Web-server software (for example, Quarterdeck's WebStar). Versions are also available for Windows NT and Unix-based servers.

WebBoard is available for Windows NT and 95 only; you might consider it if you run Windows-based servers or if you contract with a service provider that does. WebBoard contains internal server software that eliminates the need to run a separate Web-server package to dish out your conferences. WebBoard is also compatible with all major Windows Web-server packages.

Getting either server software up and running is straightforward. After installing it and starting it up, you can fine-tune its settings by logging in, using your Web browser (see "Digital Decorating: 4 Ways to Customize Your Meeting Place"). This browser-based administration means that you can configure your server from anywhere in the world (or, on an intranet, from anywhere on the network). This ability is particularly useful if your conferencing

server is running on an Internet service provider's computer.

Web Crossing as well as WebBoard also provide real-time-chat features that work with any Java-capable browser. In the base version of Web Crossing, only 5 users can chat simultaneously; a license for up to 100 simultaneous users costs \$495; and a 250-user license is \$895. With WebBoard you are able to have an unlimited number of users.

Free or Nearly Free Options

For a small Web site—say, your own personal paean to poodles—you probably can't justify buying a commercial conferencing or chat server. That doesn't mean that your site is stuck on a one-way street. Several sites offer free or nearly free chat or conferencing services you can tap into from your Web site.

Probably the most popular free chat service is EarthWeb's ChatPlanet (www.chatplanet.com), which uses a Java-based chat applet that works in version 3.0 or later of Netscape Navigator or Microsoft Internet Explorer. Creating your own ChatPlanet chat room takes just a few steps: Simply read the licensing agreement, and complete an on-screen form, entering information about your site and its chat room. You'll receive an e-mail containing some HTML code that you paste into the page where you want your chat room to appear. So that chatters can find you, EarthWeb lists your chat room in the ChatPlanet directory.

What's in it for EarthWeb? Revenue, silly. The free ChatPlanet chat rooms contain banners from EarthWeb advertisers. And EarthWeb hopes you like its chat technology so much that you'll sign up for one of the company's commercial chat services. For about \$50 per year, you can have a private chat room—one that isn't linked to the ChatPlanet directory.

continues

Bookmarks

Web Crossing
Mac Web-server software
www.lundeen.com

WebBoard
Windows Web-server software
<http://webboard.ora.com>

Macworld's conferences
www.macworld.com/more/

Register your conferencing area at Forum One
www.forumone.com

SITES USING WEB CROSSING

New York Times
<http://forums.nytimes.com/comment/>

CNN
<http://cnn.com/community/>

Excite
<http://boards.excite.com>

For about \$300 per year, you can have an advertising-free chat room containing your own custom graphics, such as a company logo. And for a flat \$5,000, you get EarthWeb Moderator, a Java-based chat server that you can run on your own Web server to create as many chat rooms as you like. It's pricey, but it's industrial-strength chat software that can handle thousands of rooms and chat-ers simultaneously.

TalkCity (www.talkcity.com) offers a similar free chat-room service. And Tripod (www.tripod.com), the spunky, twenty-something-oriented lifestyle site, offers free personal chat rooms to its premium-class members. Premium membership costs \$36 per year and includes other amenities, including 12MB of Web-server space and—yeah!—a 20 percent discount on Tripod apparel.

As for free conferencing services, my research turned up just one, and a funky one at that. LinKo (www.linko.com/efree/efree.htm), a South Korea-based site, offers free conferencing areas, Web-page-hit counters, and guest books.

As with the free chat services, setting up a LinKo-based conferencing system is a matter of filling out an on-screen form and adding a few lines of HTML to a particular page on your site. Like the rooms in free chat services, LinKo's conference boards have banner advertisements in them. But LinKo's are in Korean—guaranteed to lend an international flavor to your site.

LinKo's conferencing features can't compare with those of Web Crossing or WebBoard. There's no search capability, for example, nor is there support for user registration or multiple discussion topics. But you can't beat the price.

How to Be a Good Moderator

Whether you take the free or fee route to creating a Web community, be sure you know what you're in for. Setting up a conference or chat area is only the first step—you also need to invest some time in keeping the conversations flowing.

That's the job of the *moderator*. In a conferencing area the moderator keeps discussions active by seeding them with questions or comments. In a chat room the moderator serves as a greeter and a bouncer, encouraging visitors who just dropped in to participate and warning unruly guests to shape up or log off.

If you've set up a conferencing area

Talkin' Features: What You Get with Conferencing Software

All conferencing software provides a similar array of features that help you organize conference discussions and help participants join in.

Registration

Visitors can give themselves user names and passwords and can specify their e-mail addresses. The conferencing software tracks registered users and shows only those messages that have been added since the last time they showed up. Registration also enables you to compile a database of discussion participants—handy for marketing and research purposes. All conferencing software enables unregistered visitors to log in as guests. You can provide various levels of guest access—for instance, you can allow guests to browse conferences but require that they register in order to post messages.

Public and private discussions

You can specify that any guest or registered user may participate in a public discussion but that private discussions are restricted to those users you select. Mix and match both types of discussions, if you want. For example, you might create public discussions for your customers and private ones for your employees—or even for specific departments or work teams.

Read-only discussions

You can set up discussions in which anyone can read messages but only a certain person can post them. You might use a read-only conference to provide a daily news announcement or to post policy information.

Moderated discussions

Here's a handy feature for keeping a conference focused on its topic and for keeping out undesirable postings or posters: You can configure a conference so that incoming messages have to be screened and approved by a moderator before they become available to everyone.

Search features

Conferencing products provide search features that enable visitors to locate postings by typing words or names of participants.

HTML support

Most conferencing software enables visitors to include HTML tags in their postings so that they can create their own formatting or include links to other sites. Most also enable you to control which HTML tags you will allow in postings, so you can, for example, allow visitors to format their text but not include links to other sites.

Usage statistics

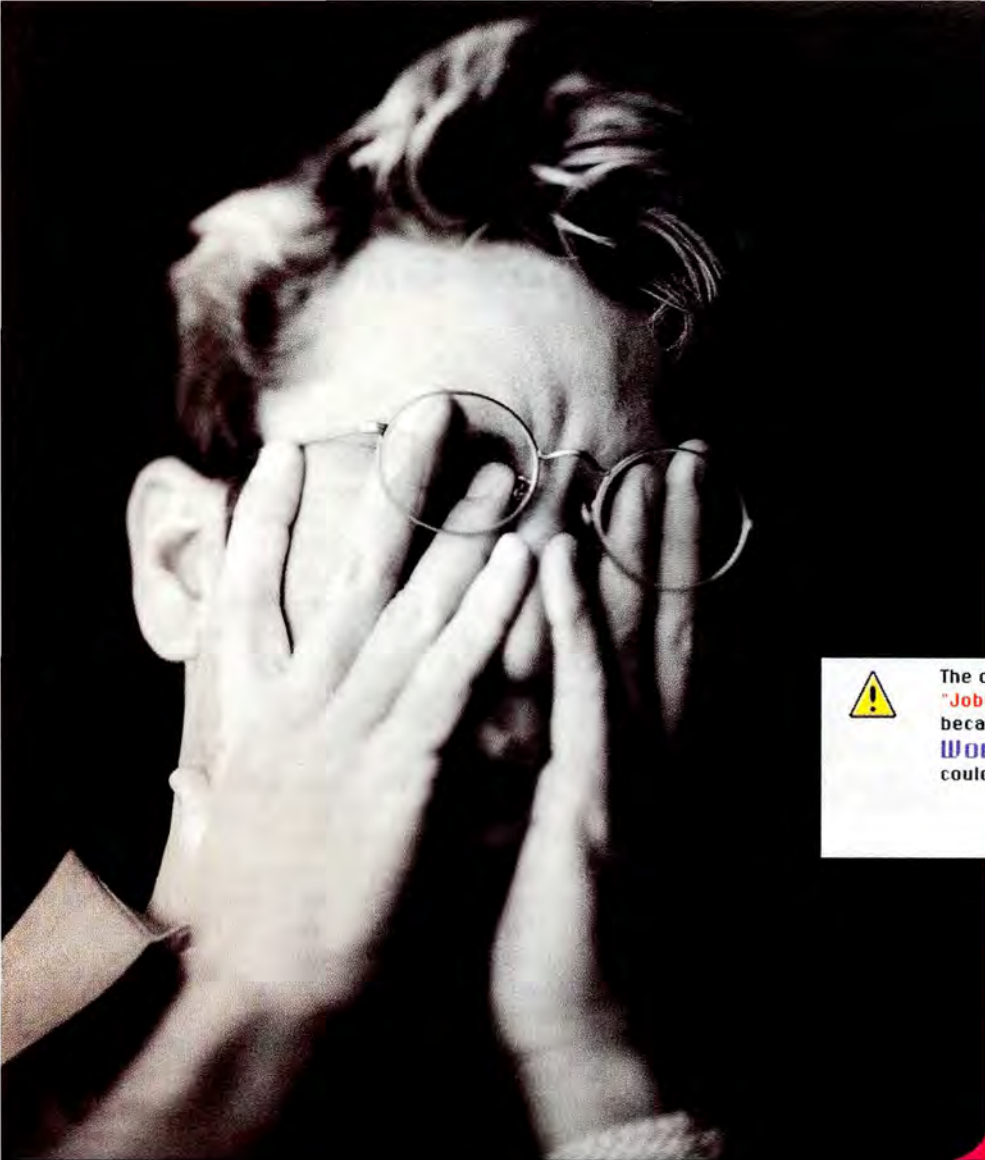
Enter the administration mode that conferencing products provide, and you can view statistics showing which discussions are attracting the most visitors. You can use this data to determine which topics your visitors are interested in and fine-tune your discussions accordingly.

as a way for customers or employees to obtain technical help or ask questions, it's important to be responsive. Check for new postings frequently, and reply to them promptly. Ignoring a conferencing area is a surefire way to kill the conversation.

Is it all worth it? Judging by the number of big-name Web sites that provide

conferencing and chat services, yes. People love to share their opinions, and conferencing and chat areas give them a soapbox where they can do so. **m**

JIM HEID is the conference chair for the Web Design '98 conference (www.thunderlizard.com) and the author of *HTML & Web Publishing Secrets* (IDG Books Worldwide, 1997).



The documents "CriticalFile.doc" and
"JobOnTheLine.xls" could not be opened
because the programs that created them
Word 97 and **Excel 97**
could not be found. Sorry...

Cancel

OK

I want my *MacLink Plus!*

Dealing with Windows files doesn't seem to get any easier does it? Just when you think you've got the compatibility issues all worked out, some new problem comes along. It's enough to make you want to cry!

Luckily there's **MacLinkPlus**. From DataViz, the compatibility experts. Our file conversion software has been helping Mac users survive in a PC dominated world for years. Loaded with hundreds of translation possibilities, **MacLinkPlus** is the only choice for converting Windows word processing, graphics and spreadsheet files for use on your Mac. With just a point and click or drag and drop. That's why Apple bundles **MacLinkPlus** with every Mac OS. And why you should upgrade your **MacLinkPlus** today.

Make sure you've got the latest.

Our newest version, **MacLinkPlus 9.7**, has been specially designed to take care of Microsoft Office 97 Word and Excel file conversion needs. As well as many other popular Mac and Windows software packages. No other product on the market offers a more complete solution than **MacLinkPlus**. Or ever will.

At DataViz, we're just as committed to the Mac today as when we started out in 1984. Which is why you'll continue to see new upgrades and clever new products from us in the months to come.

All designed to make a Mac user's life just a little less painful.



DATAVIZ

For details, visit our web site at <http://www.dataviz.com/IwantMacLink>
or call us at 1-800-270-0030 ext 132.

MacLinkPlus 9.7. File compatibility for your Mac.

All product names are trademarks of their respective holders.

The Animator's Guide to Good GIFs

Making the Most of Motion on the Web

by Barbara Assadi and Arne Hurty

These days, nearly every home page and ad banner is a living, breathing, moving creature, thanks to GIF animation. Luckily, you don't need a degree in computer science to create animations for your own site—a few basic facts and some fundamental truths about a nifty little format called GIF89 will suffice.

What Is GIF89?

GIF89 is a file format designed for the Web that lets you create files containing multiple GIF images. Today's browsers display these images one after another, creating the illusion of movement. The GIF89 format also includes playback information, such as timing and looping.

GIF89 animations don't require plug-ins. The browser simply downloads

the GIF89 file from the server once; if the animation repeats, the browser reloads the images from the cache. This means you only have to contend with the bandwidth issue once per page view.

Animation Basics

GIF animations work much like traditional flip-book and cel animations, both of which rapidly display a series of slightly different images. The more images, the smoother the animation.

In a flip book, each image is a separate page with a complete image; in cel animation, each image consists of layers of clear acetate (cels). The bottommost cel contains a static background; upper layers hold moving objects. To make a ball bounce, for example, an animator can place a series of cels, one at a time, on top of a fixed background—say, a fence. The ball appears at a new spot in

each cel. Since the fence shows through the clear acetate, the ball appears to bounce along in front of the fence.

You can create GIF animations that work like flip or cel animations using a number of programs. Our favorite is Yves Piguet's GifBuilder shareware. (You'll find it on *Macworld's* Web site, www.macdownload.com.)

A "good old" format that's been around for a long time, GIF89 continues to be the most popular form of motion on the Web. And for good reason—it's very easy to use. While you should be able to start animating quite quickly, to get the most out of your GIF89 animations, check out "Five Fundamental Truths about GIF89 Animation." [m](#)

BARBARA ASSADI and ARNE HURTY, principals of AssadiHurty, create marketing materials for technology companies.

Simple Steps for Simple GIFs

It's easy to create your own animations using Adobe Photoshop and Yves Piguet's GifBuilder; just follow the basics below. (For a more in-depth tutorial on GifBuilder, see "Animate Your Web Site," *Media*, September 1996.)

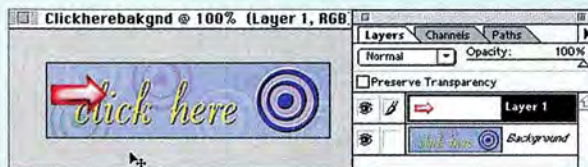


- 1 Start by creating a background image in Photoshop.

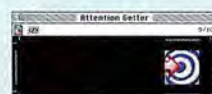
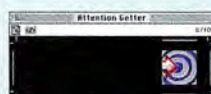


- 2 Select all (⌘-A), copy the image to the Clipboard (⌘-C), and paste it into the Frames window of an open GifBuilder file.

Frames						
1 frame	Length: 2.00 s	Size: 240x63	Loop: forever			
Name	Size	Position	Disp.	Delay	Transp.	
Frame 1	240x63	(0; 0)	N	200	-	



- 3 Back in Photoshop, make yourself a new layer in the same file as the background. Create the object you'd like to have move over the background.
- 4 In the Edit menu, choose Copy Merged, then paste into GifBuilder's Frame window to make frame 2 of the animation.
- 5 Return to Photoshop and make the object's layer active, then move the object to a new location for frame 3.
- 6 Repeat steps 4 and 5 until you have all the frames you need for the motion you want.
- 7 In GifBuilder select Frame Optimization from the Options menu and save your file.



You can preview optimized frames by scrolling through the list in the Frames window with the down-arrow cursor.

Five Fundamental Truths about GIF89 Animation

GIF animations are easy to create, but to make the most of them you need to consider a few truths that are not self-evident. (Take a peek at www.macworld.com/more/ to see the following examples in action.)

1 Big file sizes are bandwidth bugaboos.

The most important thing to remember is that big files clog the pipeline. While there are a number of ways to drive up file sizes, the flip side of that is there are also several ways to keep files small. Try these file-containment tips.

- **Use the smallest color palette possible for the job.** GIF89 is an uncompressed format, which means files can grow to enormous proportions if you use too many colors.

- **Don't dither.** Dithered colors look smoother than solids, but they create texture in the image, which drives file sizes way up. You can uncheck Dithering in GifBuilder's Options menu, but to be really safe, you



2 bits
(16 colors)
1.5K file

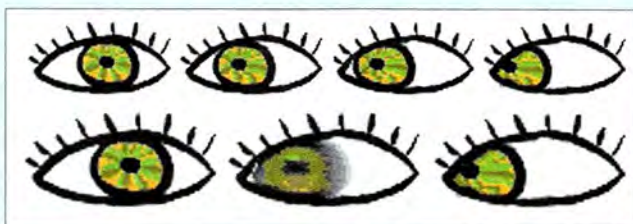


6 bits
(64 colors)
2.5K file



8 bits
(256 colors)
4K file

Decreasing Bit Depth Try converting individual cels to 6-, 5-, 4-, and even 3-bit color to see what happens to the file sizes and image quality as the bit depth goes down.



Blurred Vision The top series has four frames, one for each step of the eye's movement. In the bottom set, a single blurred frame takes the place of two frames from the top set. Blurring gives the feel of smooth motion in fewer frames.

should stay away from dithering in Photoshop as well.

- **Reduce the number of frames.** There are several tricks you can perform to simulate a lot of motion with just a few frames. For example, placing a blurred frame between two static frames gives the appearance of many frames (see "Blurred Vision"). You can extend this trick by using speed and motion lines the way cartoonists do (see "A Winning Streak").

- **Omit needless frames.** Examine your finished animation frame by frame. Try removing any frames that seem unnecessary. You may be able to achieve the same effect in fewer steps.

- **Less is more.** An animated GIF redraws only the pixels that change. Thus, if you animate a

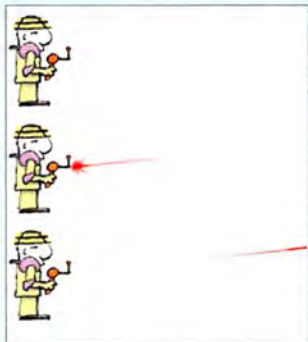
big object, more of each frame gets redrawn and you increase file size. Compare two animations, one of a life-size quarter, the other of a dime. You will see that the dime cel file is smaller than the quarter cel file—a savings you get in every frame.

2 Web surfers can get seasick.

Motion attracts attention, but it can also distract visitors who are trying to read—use it sparingly. A small flashing click-here icon might get just as much attention (and be less irritating) than a large blinking banner. Try setting your animation to loop just a few times, particularly if you want people to settle in and read your content carefully.

3 Some "unexpected" problems can be avoided.

Use the same color palette in all stages of creating your animation. If the colors in the "static" background change, even slightly, from frame to frame, GifBuilder sees that variation as animation and redraws that portion of the frame. Unintentional color changes often occur when you convert files to index color. If you create your animation frames in RGB format in Photoshop, pick the frame that has the most colors, then convert it to index color using various options. Try the Adaptive palette and experiment with different bit depths to see



A Winning Streak Blending the laser blasts' color—from strong red to light red in the first blast, and light to strong red in the second—creates the impression of a pulse moving smoothly across the screen, in just two frames.

how few colors you can use while still preserving the image quality. Then select Previous as the palette choice when converting the other frames to the animation.

4 Automated optimization is an animator's friend.

A number of programs offer automation features. Take advantage of them when you can.

- **Use GIF Wizard (www.gifwizard.com).** This is a great online utility that automatically redoes GIF animation in multiple-bit depths, using multiple palettes. Surprisingly fast, GIF Wizard works with files right off your hard drive. (You must pay a membership fee based on the number of scans and the time of day you perform them.)

- **Crop your frames.** GifBuilder's Frame Optimization feature dramatically reduces file sizes by automatically cropping the frames in your animation. Frame Optimization examines each frame for changes in color and pixel position and then crops the frame down to a rectangle just large enough to house the portions of the image that need to be redrawn. You should also examine your optimized animation frame by frame; you might find places to crop it in even closer than Frame Optimization does.

5 You can't assume that colors will be consistent across platforms.

If it's important that the colors in your animation be consistent across platforms, use browser-safe colors. GifBuilder's 6x6x6 palette, for example, is safe for both Mac and PC browsers; it contains only those colors that show up correctly on both platforms. In most cases browser-safe colors also keep file sizes smaller.

MORE QUARKXPRESS® POWER. LESS MONEY.
THAT'S MATH EVEN DESIGNERS CAN UNDERSTAND.

EXTENSIS POWERSUITE
FOR QUARKXPRESS
3 GREAT PRODUCTS!
ONE INCREDIBLE LOW PRICE!

SLASH DESIGN TIME, CREATE STUNNING EFFECTS AND PREFLIGHT RIGHT IN QUARKXPRESS®

Now you can get three award-winning Extensis productivity software packages for QuarkXPress for one incredibly low price.

The Extensis PowerSuite for QuarkXPress includes:

Extensis QX-Tools™ 2.0— 15 time-saving tools that slash through QuarkXPress projects. With QX-Tools you can scale multiple objects, use layers, fine tune paragraph rules, use a powerful search and replace engine and much more.

Extensis QX-Effects™ 3.0— Quickly create professional cast and drop shadows, bevels and glows right in QuarkXPress. Interactively preview and custom design each effect. Effects feather seamlessly with background images. QX-Effects intelligently determines the optimal resolution and color mode so your designs print perfectly every time.

Preflight Designer™ 1.0— The easy-to-use, advanced preflight solution for designers. Intelligently inspect your QuarkXPress files and collect every file, font and image you need for perfect printing. Preflight Designer kills output problems before they cost you time and money.

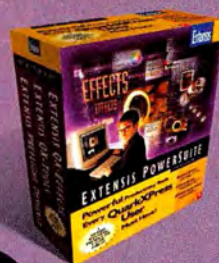
The Extensis PowerSuite for QuarkXPress — Three award-winning products every Quark user needs for one low price.



DOWNLOAD A FREE TRIAL VERSION

<http://www.extensis.com>

Extensis, the Extensis logo and QX-Tools are registered trademarks and QX-Effects and Preflight Designer are trademarks of Extensis Corporation. Quark and QuarkXPress are trademarks of Quark Incorporated. Macintosh is a registered trademark and Mac is trademark of Apple Computer, Inc. All other trademarks are property of their respective owners.



SAVE
\$130.00

\$199.95

EXTENSIS POWERSUITE
FOR QUARKXPRESS 3.31-4.0
MACINTOSH

1.800.796.9798

Circle 14 on reader service card

SOURCE CODE: 1087

Make Mine MIDI

Who's Afraid of Musical Instrument Digital Interface?

by Christopher Breen

MIDI (Musical Instrument Digital Interface) has long been deemed useful only to musicians and therefore has been largely ignored by those involved in multimedia and the Web. Yes, MIDI is a wonderful tool for musically inclined souls, but it also has its uses in other areas of multimedia—for adding musical soundtracks to Web sites, presentations, and shareware games, as well as for controlling and synchronizing MIDI-aware devices such as samplers and lighting controllers. There's no need to be mystified by MIDI—especially once you know the advantages of using it (low cost and space savings, for instance) and how to employ it in your own projects.

Why Use MIDI?

The first reason to choose MIDI is that it provides a trim alternative to digital audio. For example, a 1-minute, stereo, 16-bit, 44.1kHz audio file devours approximately 10.6MB of hard-disk space, whereas a 1-minute MIDI file might consume as little as 7K. If you're throwing together an expansive CD-ROM or DVD project, you may have storage to burn and so opt for huge digital-audio files, but those who depend on the Internet—Webmasters and authors of tuneful shareware products, for example—don't have this luxury. For Net folks, file size is crucial, and MIDI can provide a load of musical information without gobbling up bandwidth.

The second reason to opt for MIDI is that MIDI files are not CPU-intensive. In order to play a multitude of digital-audio tracks concurrently, your Mac

requires a PowerPC processor. On the other hand, you can easily record and play *sequences* (MIDI songs) containing dozens of MIDI tracks on 680X0 Macs.

Third, MIDI won't break your budget. You can purchase a MIDI setup for around \$500. The Roland PC-180 is a perfectly capable 49-key MIDI controller keyboard and costs around \$240. The Yamaha MU10 synthesizer module costs about the same. (For the full set of equipment, see "Making Connections: A Typical Macintosh MIDI Setup.")

Finally, MIDI files are readily available on the Internet and in clip-media collections, so you can use MIDI even if you're not able to play a note. Warning: You can find numerous copyrighted MIDI files on the Web, but most have not been cleared for commercial use and therefore shouldn't be used in public

continues

Making Connections: A Typical Macintosh MIDI Setup



Your Computer
of Choice

MIDI Interface

Your MIDI setup requires a go-between to translate MIDI data to and from the Macintosh. That go-between is the MIDI interface. Connection to a MIDI interface is made via one or both of the Mac's serial ports. Some synthesizers and MIDI tone modules carry a serial-port connector and therefore don't require a separate MIDI interface.

MIDI Sound Module

You can add a number of MIDI devices to your system either by daisy-chaining the devices via MIDI Thru ports or by adding them to a multiport MIDI interface. These devices can include additional synthesizers, drum machines, samplers, and effects units.

MIDI Keyboard Controller

Typically, MIDI controllers come in the form of keyboards, although there are also drum, guitar, bass, wind, MIDI mixing-board, and yes, even accordion controllers. Some controllers carry synthesizer chips of their own; others are mute, existing only to transmit and receive MIDI data.

broadcast. To find legal, fully licensed, commercial sequences, check the advertisements in the back of music magazines such as *Electronic Musician* and *Keyboard*.

MIDI Defined

Before you start using MIDI, it's a good idea to understand the basics. MIDI is a language used to tell MIDI-aware machinery (such as synthesizers and drum machines) and programs what to do—it's the musical equivalent of PostScript. For example, when you press middle C on your MIDI keyboard, the keyboard sends the MIDI synthesizer a message along the lines of "I'm playing note C3 at medium volume." Naturally, MIDI would be terribly limited if this were all the information contained in a MIDI message. But MIDI's vocabulary is broader than simple "play this note, this loud" commands. Given the proper machinery, MIDI lets you perform feats such as remotely operating the transport controls of a tape recorder or the faders on a lighting controller.

In many cases you'll want to use MIDI files that can be played on a variety of synthesizers and computer platforms. For this reason, it's a good idea to use General MIDI (GM)-compatible products. GM is a subset of the MIDI standard that helps make sure that your MIDI files sound the same, more or less, no matter what GM-compatible synthe-

sizer a user plays them on. That's partly because GM creates a standardized location for instrument sounds on synthesizers—for instance, on all GM-compatible synthesizers, the banjo sound is at instrument location 106 and the cello sound is at location 43. To visualize this, imagine walking into a room full of GM-compatible synthesizers, pushing the combination of the 4 and 3 buttons on each synthesizer, and hearing the cello sound come out of each one.

GM also requires that GM-compatible instruments carry a standardized bank of 128 sounds and be capable of playing at least 24 notes at the same time. How similar the instruments sound depends on the audio quality of the synthesizers.

To record and edit MIDI data, you need a program called a *sequencer*—a cross between a MIDI tape recorder and a musical word processor. Just as a standard is necessary so that graphics files created by one application can be read by another, so too MIDI sequencers require a pan-sequencer standard, called the Standard MIDI File (SMF) format. By using SMF, you ensure that your files can be played on other sequencers and platforms. (See our review of two new MIDI sequencers in this issue.)

MIDI and the Mac

Unlike PCs, Macs have sound capabilities built in. For playing MIDI, that

means using Apple's QuickTime Musical Instruments extension—a limited solution. To begin with, this extension doesn't provide all 128 instruments of the GM sound set but rather a subset of just 58 sounds and 1 drum kit. More important, the quality of those 58 sounds leaves much to be desired.

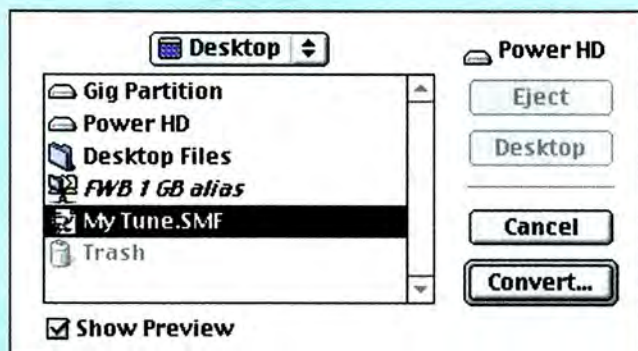
Thankfully, QuickTime 2.5 provides a way to skirt QuickTime Musical Instruments. The QuickTime Settings control panel lets you route MIDI information through another MIDI device—an external synthesizer or a higher-quality software-based synthesizer such as InVision Interactive's CyberSound Studio (\$99; 650/812-7380), for example.

Uses for MIDI

The Web Adding MIDI to your Web site can be accomplished through the auspices of QuickTime (see "Make Your Site Sing," December 1997) or with the help of Beatnik, a free plug-in from Headspace (650/696-9400). In addition to Beatnik's providing a better 32-voice software synthesizer than QuickTime, one of its more attractive features is groovoids—49 short sound samples contained within the plug-in. These sounds range from simple beeps and clicks to a trumpet fanfare you might hear at the Kentucky Derby. With a line or two of HTML code, you can brighten up your site by triggering a groovoid when a user performs a specific action, such as

MIDI-to-QuickTime Conversion

Since version 2.0, QuickTime has included a MIDI track. Having this track makes it easier to embed MIDI files in a Web page or presentation. But how do you convert a Standard MIDI File into a QuickTime movie so you can put it on your Web page? Just follow these steps, and all will be revealed. (To learn how to create a Web page that plays a MIDI file automatically, see "Make Your Site Sing," December 1997. You can find it in the *Macworld* archives at www.macworld.com.)



1 Choose Open from Movie Player's File menu (Movie Player is part of QuickTime), and select a MIDI file saved in SMF format. Click on the Convert button, and save.



Your Standard MIDI File now opens as a QuickTime movie containing no video information.

opening a page or passing over a link. Because groovoids are part of the Beatnik plug-in, they play immediately—there's no waiting for the sound to download.

To exploit Beatnik's full potential, check out Headspace's Beatnik Editor. With this editor you can import MIDI sequences and save them in Beatnik's Rich Music Format (RMF). One of the editor's most intriguing features is the ability to save an RMF file as a stand-alone document. Such a document contains your performance, instrument, and copyright information as well as a run-time engine that plays the RMF file's songs, using Beatnik's instrument sounds—no additional software is required. Although RMF files are far larger than their SMF counterparts—554K for a 31K 4-minute SMF I converted to RMF—they're small enough to post on a Web site or enclose in an e-mail message.

Multimedia While MIDI is a language used to tell MIDI-aware machinery and programs what to do, most users think only of synthesizers and sequencers in this regard. Yet MIDI can control *any* MIDI-compatible machine. In addition to exotic devices such as MIDI-controllable lighting consoles, this includes samplers, hardware devices that record and play digital-audio snippets.

Here's one way MIDI and a sampler can help you synchronize sound effects in a video project: Using a MIDI inter-

face capable of syncing to SMPTE (a synchronization standard) time code, it's possible to synchronize a sequence to a video source. Simply stripe the video with time code; route the time code to the MIDI interface's SMPTE input, using a standard audio cable; and fire up a time-code-friendly sequencing program—all professional sequencing applications support SMPTE synchronization. On the sampler, map each sound effect to a different key on the MIDI keyboard—gently chirping birds on C2, for example. Now put the sequencer into Record mode, start the video, and trigger each sound effect at the proper time by playing the corresponding key on the MIDI controller. When you've finished recording the sequence, tighten up any loose timing from within your sequencer by shifting the notes that represent the beginning of each sound effect.

Game Design Gaming is an area where having small file sizes can be crucial. Shareware-game authors hoping to tempt users to download their latest digital diversion should think twice before saddling potential customers with megabyte upon megabyte of digitized garage-band sound.

Typically, shareware games include digital-audio files that are looped together to create a soundtrack. Unfortunately, to create a diverse soundtrack, you need

numerous different loops, which eat up space on the disk very quickly. A mere couple of extra megabytes of data can make the difference between a file's being downloaded and its being passed by. A slender MIDI soundtrack helps reduce file size.

For a highly entertaining example of MIDI in a shareware game, have a look at Harry the Handsome Executive, from Ambrosia Software (www.ambrosiasw.com).

Coda

Granted, unless you're a musician, MIDI is not the be-all and end-all of your work. But now you can see that MIDI is not just for musicians and that it's a worthwhile addition to any multimedia designer's professional bag of tricks. The next time you're looking for that little extra something to separate your project from the pack, consider MIDI. **m**

Macworld contributing editor and musician CHRISTOPHER BREEN uses MIDI extensively in his production studio and in live performance.

Bookmarks

Headspace
Beatnik
www.headspace.com

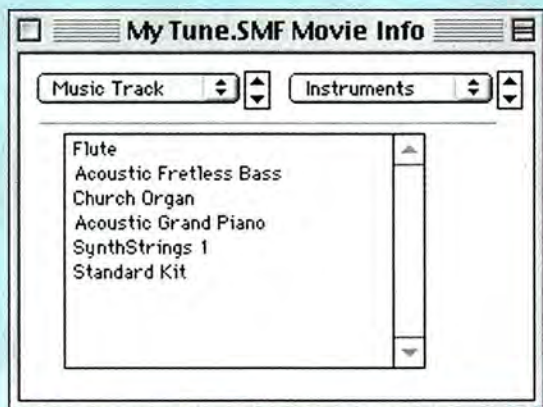
InVision Interactive
CyberSound Studio
www.cybersound.com

Public-domain MIDI files
www.prs.net/midi.html

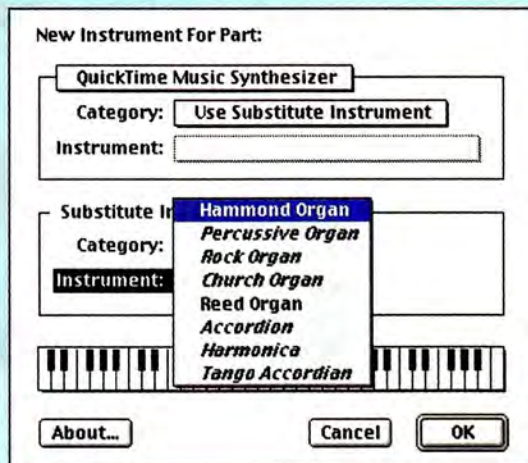
Hear the difference between
high- and low-quality sound.
www.macworld.com/more/

Roland and Edirol
Roland PC-180 controller
keyboard
www.edirol.com

Yamaha
MIDI equipment
www.yamaha.com



2 Perhaps you don't care for the instrument sounds contained in your MIDI file. Fine—change them. To do so from within Movie Player 2.5 or later, be sure the Authoring Extras plug-in resides in the same folder as Movie Player. Now choose Get Info from Movie Player's Movie menu and select Music Track from the left-hand pull-down menu and Instruments from the right-hand pull-down menu.



3 Double-click on an individual instrument name to open an instrument-selection window, and choose a new instrument from the Instruments pull-down menu.



AFTER 17 YEARS, MATT IS STARTING A NEW LIFE.

WITH YOUR NAME AND SOCIAL SECURITY NUMBER.

Until now, when you gave out personal information on the web you had no idea where it could end up. The TRUSTe symbol gives you the power to find out.



www.truste.org

TRUSTe is an independent non-profit initiative sponsored by: AT&T, CyberCash, Excite, IBM, InterNex, Lands' End, MatchLogic, Netcom, Netscape, Oracle, Tandem and Wired. ©1997 TRUSTe

Macworld

Advertiser Index

Say you saw it in Macworld. To purchase products advertised in this issue call the phone numbers below or use the reader service number for our Product Information Card located after the product index.

Page No.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone	Page No.	Advertiser	Reader Svc. No.	Phone
47	Adobe - Illustrator	252	800-521-1976	97	Hewlett Packard	11	800-851-1170	14	MetaCreations	5	800-846-0111
110-111	Adobe - PageMaker	253	800-521-1976	7	Hitachi NSA	74	800-441-4832	114	Microtek Lab, Inc.	—	800-654-4160
60	Agio Designs	—	800-688-2466					63	Mitsubishi Electronics	261	800-937-2094
58	Alsoft	140	800-257-6381	61	Infowave	32	800-663-6222	104	Multi-Ad Services	187	800-245-9278
49	American Power Conversion	72	800-788-2208	22-23	lomega - Zip	—	—				
10	Anthro	—	800-325-3841	9	IXMICRO	150	888-467-8282	64-65	NEC Technologies	16	800-NEC-INFO
39	ATI Technologies	256	—					4-5	Newer Technology	83	—
53	Avery International	—	800-477-4404	136	J & R Computerworld	282	800-221-8180	6	Orange Micro	33	714-779-2772
55	Avery International	—	800-477-4404	8C	Kensington	12	800-221-8180	54	Orange Micro	34	714-779-2772
57	Avery International	—	800-477-4404	90	Kingston Technology Corporation	201	800-435-0677				
								18	Pantone	15	—
147	Bottom Line Distribution	221	800-990-5688	143	L. A. Trade	—	800-433-3762	131	Pro Direct	135	800-524-9952
				IFC,1	La Cie	52	—	41	Phillips	13	800-524-9952
51	Caera	69	800-535SCAN								
140-141	Club Mac	96	800-CLUBMAC	56	Mac Academy	106	800-527-1914	183-184	Seybold	—	888-800-8922
144-145	Computer Discount Warehouse	2	800-509-4239	148-149	Mac Connection	145	800-800-3333	83	Sony Electronics Inc.	—	—
				134-135	Mac Mall	131	800-222-2808	59	Syquest Technology	—	—
119	Dataviz	—	800-780-1466	43	Mac Soft	23	800-229-2714				
17	Denaba Software	57	800-733-6322	45	Mac Soft	30	800-229-2714	137	The LLB Co.	220	800-848-8967
31-33	Diehl Graphsoft	46	410-290-5114	101	Mac Soft	29	800-229-2714	132-133	The Mac Zone	71	800-436-0606
146	Digital Graphix	36	800-680-9062	103	Mac Soft	28	800-229-2714				
				109	Mac Soft	25	800-229-2714	84	Umax Computer	99	888-625-UMAX
12-13	Epson America	—	800-BUYEPSON	138-139	Mac Warehouse	150	800-434-3035				
89	Epson America	—	800-BUYEPSON	IBC	Macromedia	37	800-945-4049	20-21	ViewSonic	59	800-888-8583
122	Extensis	14	800-796-9798	11	Mactell Corporation	75	888-622-8355	8	VST Technologies	73	508-263-9700
				150	Macworld Expo	75	800-645EXPO	27	Whistle Communications	84	—
94	Fujitsu	202	800-626-4686	98	Matrox Graphics	24	—	29	Xante Corporation	112	800-926-8839
74-75	GCC Technologies	43	—	142	MegaHaus	229	800-786-1184				

Macworld

Product Index

A quick and easy product index from Macworld. Simply use this index to find the page or advertiser of the products which interest you. Then, use the reader service number for our FastFacts Product Information Card located on the following page.

Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.	Page No.	Advertiser	Reader Svc. No.
SOFTWARE			HARDWARE			131 Pro Direct			135 SERVICES		
CAD/CAM			BOARDS			59 Syquest Technology			56 Mac Academy		
31-33	Diehl Graphsoft	46	39	ATI Technologies	256	EXPANSIONS/UPGRADES			TRADE SHOWS/CONFERENCES		
COMMUNICATION			9	IXMICRO	53	143	L. A. Trade	—	183-184	Seybold	—
119	Dataviz	—	6	Orange Micro	33	MISCELLANEOUS			150	Macworld Expo	—
GRAPHICS/DTP			54	Orange Micro	34	49	American Power Conversion	72	ACCESSORIES		
47	Adobe - Illustrator	252	COMPUTER SYSTEMS			27	Whistle Communications	84	FURNITURE		
110-111	Adobe - PageMaker	253	84	Umax Computer	99	MULTIMEDIA			60	Agio Designs	—
17	Denaba Software	57	DIGITIZERS/SCANNERS			12-13	Epson America	—	10	Anthro	—
122	Extensis	14	114	Microtek Lab, Inc	—	89	Epson America	—	MAIL ORDER		
61	Infowave	32	DISPLAY			POWERBOOK			147	Bottom Line Distribution	221
IBC	Macromedia	37	7	Hitachi NSA	74	8	VST Technologies	73	140-141	Club Mac	96
14	MetaCreations	5	1	La Cie	52	PRINTERS			144-145	Computer Discount Warehouse	2
104	Multi-Ad Services	187	63	Mitsubishi Electronics	261	74-75	GCC Technologies	43	146	Digital Graphix	36
MISCELLANEOUS			64-65	NEC Technologies	16	97	Hewlett Packard	11	136	J & R Computerworld	282
18	Pantone	15	20-21	ViewSonic	59	98	Matrox Graphics	24	143	L. A. Trade	—
MULTI-MEDIA			HARD DISK/STORAGE			29	Xante Corporation	112	148-149	Mac Connection	145
IBC	Macromedia	37	147	Bottom Line Distribution	221	SECURITY			138-139	Mac Warehouse	150
OCR			140-141	Club Mac	96	49	American Power Conversion	72	142	MegaHaus	229
51	Caera	69	94	Fujitsu Computer Products of America	202	SYSTEMS			131	Pro Direct	135
UTILITIES			22-23	Imega - Zip	—	147	Bottom Line Distribution	221	137	The LLB Co.	220
58	Alsoft	140	90	Kingston Technology Corporation	201	146	Digital Graphix	36	132-133	The Mac Zone	71
61	Infowave	32	IFC,1	La Cie	52	11	Mactell Corporation	75	DIRECTORY		
			98	Matrox Graphics	24						
			142	MegaHaus	229						

Macworld puts you in touch with the information you need most with two easy options:

1 dial 503.684.5370 Fax In Card

Simply fill in the questionnaire, circle the reader service numbers that correspond to the vendors you would like information from, then fax your form to us at 503.684.5370. FREE product information will be sent to you directly from vendors.

2 postage pre-paid Mail In Card

After filling in the questionnaire, circle the reader service numbers that correspond to the vendors you would like information from, then just drop the postcard in the mail. Vendors will send FREE product information directly to you.



Check this box to subscribe to Macworld

YOU WILL BE BILLED \$24 FOR A ONE-YEAR (12 ISSUE) SUBSCRIPTION (US ONLY). SUBSCRIPTION WILL BE SENT TO NAME AS NOTED BELOW. PLEASE CHANGE IF MAILING ADDRESS IS DIFFERENT.

PLEASE ANSWER THESE QUESTIONS, CHECK ALL ANSWERS THAT APPLY

1a. For which of the following Mac-related products do you specify, recommend, approve, purchase or influence the purchase?

1b. Which of the following do you plan to purchase in the next 12 months? (Check all that apply.)

- | | Purchase Involvement | Plan to Buy |
|-------------------------------------|--------------------------|-----------------------|
| Desktops/PowerBooks | <input type="radio"/> 1 | <input type="radio"/> |
| Monitors | <input type="radio"/> 2 | <input type="radio"/> |
| Printers | <input type="radio"/> 3 | <input type="radio"/> |
| Storage Devices | <input type="radio"/> 4 | <input type="radio"/> |
| Networking/Data Communications | <input type="radio"/> 5 | <input type="radio"/> |
| Internet/Intranet products/services | <input type="radio"/> 6 | <input type="radio"/> |
| Software: business/productivity | <input type="radio"/> 7 | <input type="radio"/> |
| graphics/design | <input type="radio"/> 8 | <input type="radio"/> |
| interactive publishing/multimedia | <input type="radio"/> 9 | <input type="radio"/> |
| entertainment | <input type="radio"/> 10 | <input type="radio"/> |
| education | <input type="radio"/> 11 | <input type="radio"/> |
| other software | <input type="radio"/> 12 | <input type="radio"/> |
| Any other products | <input type="radio"/> 13 | <input type="radio"/> |

2. Are you employed, and involved in purchase decisions for 5 or more Macs? ☐ Yes (1) ☐ No (2)

3. What's Your Opinion?

What are your main frustrations in making Mac-related purchase decisions?

- ☐ 1. Lack of expertise in assessing products
☐ 2. Difficulty in installing or using products
☐ 3. Too many choices
☐ 4. Not enough choices
☐ 5. Unclear needs
☐ 6. Concern that cheaper, better products are about to come out
☐ 7. Other (please specify) _____

PRODUCT CATEGORY INFORMATION

For information on all of the products mentioned in an article or an entire category of advertised products, circle the appropriate number below.

- 951 Mail Order Companies
 952 Printers
 953 Scanner & Digital Cameras
 954 Online/Internet
 955 Storage Devices
 956 Monitors & Graphics Boards
 957 Utilities
 958 Clip Art & Fonts
 959 Memory
 960 Draw/Paint/DTP Software
 961 Image-Editing Software
 962 Other Graphics Software

READER SERVICE NUMBERS FOR ADVERTISED PRODUCTS CAN BE FOUND IN THE PRODUCT'S AD AND IN BOTH THE ADVERTISER INDEX AND PRODUCT INDEX.

1	2	3	4	5	146	147	148	149	150	291	292	293	294	295	461	462	463	464	465	531	532	533	534	535
6	7	8	9	10	151	152	153	154	155	296	297	298	299	300	466	467	468	469	470	536	537	538	539	540
11	12	13	14	15	156	157	158	159	160	401	402	403	404	405	471	472	473	474	475	541	542	543	544	545
16	17	18	19	20	161	162	163	164	165	406	407	408	409	410	476	477	478	479	480	546	547	548	549	550
21	22	23	24	25	166	167	168	169	170	411	412	413	414	415	481	482	483	484	485	551	552	553	554	555
26	27	28	29	30	171	172	173	174	175	416	417	418	419	420	486	487	488	489	490	556	557	558	559	560
31	32	33	34	35	176	177	178	179	180	421	422	423	424	425	491	492	493	494	495	561	562	563	564	565
36	37	38	39	40	181	182	183	184	185	426	427	428	429	430	496	497	498	499	500	566	567	568	569	570
41	42	43	44	45	186	187	188	189	190	431	432	433	434	435	501	502	503	504	505	571	572	573	574	575
46	47	48	49	50	191	192	193	194	195	436	437	438	439	440	506	507	508	509	510	576	577	578	579	580
51	52	53	54	55	196	197	198	199	200	441	442	443	444	445	511	512	513	514	515	581	582	583	584	585
56	57	58	59	60	201	202	203	204	205	446	447	448	449	450	516	517	518	519	520	586	587	588	589	590
61	62	63	64	65	206	207	208	209	210	451	452	453	454	455	521	522	523	524	525	591	592	593	594	595
66	67	68	69	70	211	212	213	214	215	456	457	458	459	460	526	527	528	529	530	596	597	598	599	600
71	72	73	74	75	216	217	218	219	220															
76	77	78	79	80	221	222	223	224	225															
81	82	83	84	85	226	227	228	229	230															
86	87	88	89	90	231	232	233	234	235															
91	92	93	94	95	236	237	238	239	240															
96	97	98	99	100	241	242	243	244	245															
101	102	103	104	105	246	247	248	249	250															
106	107	108	109	110	251	252	253	254	255															
111	112	113	114	115	256	257	258	259	260															
116	117	118	119	120	261	262	263	264	265															
121	122	123	124	125	266	267	268	269	270															
126	127	128	129	130	271	272	273	274	275															
131	132	133	134	135	276	277	278	279	280															
136	137	138	139	140	281	282	283	284	285															
141	142	143	144	145	286	287	288	289	290															

PLEASE PRINT OR TYPE ALL INFORMATION.

Expires June 25, 1998. 51 March 1998

MR GARY VOGT
 5065 WOLVERTON DR
 FLORISSANT MO 63033-4438

E-mail _____
 Title _____
 Company _____
 Phone _____ Fax _____

TWO SIMPLE WAYS TO GET **FREE** PRODUCT INFORMATION

Macworld
THE ESSENTIAL RESOURCE

Macworld puts you in touch with the information you need most with
two easy options — fax back or mail in the reader service card.

FREE

Fax back. Mail in. Just don't miss out.

Fold here and close with tape. Do not staple.



50% TOTAL RECOVERED FIBER
10% POST-CONSUMER FIBER



BUSINESS REPLY MAIL

FIRST-CLASS MAIL PERMIT NO. 677 PORTLAND OR

POSTAGE WILL BE PAID BY ADDRESSEE

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES



READER SERVICE DEPARTMENT
12950 SW PACIFIC HWY STE 7
TIGARD OR 97223-9747



ProDirect

800-524-9952



"The fastest array in this test, the ProDirect PowerRAID" -MacUser 8/97

"Big, fast, at 7200 RPM nicely priced. Who could ask for anything more?" -MacWorld 5/97

"If you're a desktop-video or graphics professional, you need not only a lot of capacity but also alot of speed: ... The 9-GB ProDirect PD19171N ... excellent choice" -MacUser 6/97

*32 MB and above only. LIMITED TIME OFFER

ProDirect means...
 • Toll-Free Tech Support
 • Same Day Shipping
 • No Sales Tax Outside MN
 • Reseller Pricing Available
 • Educ. & Govt. Discounts
 • Never a Surcharge!

Ad No. WD498

FREE SHIPPING!
Just Ask!



Service • Performance • Price • Always

"TEST DRIVE" ANY HARD DRIVE WE SELL FOR ALMOST 3 MONTHS WITH OUR UNBEATABLE 90 DAY PERFORMANCE GUARANTEE. ALWAYS CALL FOR THE MOST CURRENT PRICE ON ALL ADVERTISED PRODUCTS. PRICES CHANGE DAILY.

A Hard Drive from Them...

A Hard Drive from ProDirect...

Now with New Personal Choice Speed Tuning!

Speed-Tuned to YOU for the exact way you work:

- ☐ AV Recording
- ☐ Desktop Publishing
- ☐ Multi-Purpose Use

PLUS
 MacWorld & MacUser
Award-Winning Performance
PLUS
 Tech Support from the pros that do more than pack boxes.

The Speed-Tuned Difference
 Working closely with drive manufacturers to identify and optimize key internal mode settings for the Mac, our hard drives are calibrated to operate at peak efficiency. We call it "Speed-Tuning" and it works. The proof is in the awards our drives keep winning.

IBM ULTRASTAR

9.1GB Narrow or Wide **\$785**
 8ms Seek 512K Buffer 7200 RPM 5 Year Warranty

ULTRASTAR ES

	INTERNAL	EXTERNAL
2.1 GB (DCAS32160S)	\$205	\$265
4.3 GB (DCAS34330S)	\$245	\$295
9.1 GB (DCAS34330V)	\$335	\$385

ULTRASTAR XP High Speed DTP & AV

	INTERNAL	EXTERNAL
2.1 GB (DCHS39100S)	\$205	\$265
4.3 GB (DCHS39100V)	\$245	\$295
9.1 GB (DCHS39100V)	\$335	\$385

All IBM drives have 8ms Seek 512K Buffer 7200 RPM 5 Year Warr.

Seagate CHEETAH Fastest Drive Running!

THE CHEETAH FAMILY BOASTS A 10,000 RPM SPINDLE SPEED WHICH GREATLY ENHANCES ITS OVERALL PERFORMANCE

4.5GB Wide (ST34501W) **\$695**
 9.1GB Wide (ST19101W) **\$1099**
 7.9ms Seek 512K Buffer 10,000 RPM 5YR. Warr.

BARRACUDA Legendary Performance

4.5GB Wide (ST34572W) **\$625**
 9.1GB Wide (ST19171W) **\$895**
 8ms Seek 512K Buffer 7200 RPM 5 Year Warranty

CHEETAH Fastest Drive Running!

	INTERNAL	EXTERNAL
4.5 GB (ST34501N)	\$685	\$745
9.1 GB (ST19101N)	\$1075	\$1135

BARRACUDA Legendary Performance

	INTERNAL	EXTERNAL
2.2 GB (ST32272N)	\$385	\$445
4.5 GB (ST34572N)	\$575	\$635
9.1 GB (ST19171N)	\$865	\$925

ELITE Awesome Capacity!

	INTERNAL	EXTERNAL
23 GB (ST423451N)	\$1795	\$1895
11ms Seek 2048K Buffer 5400 RPM	\$1875	\$1975

Quantum WOW!

CAPACITY FOR THE EXTRAORDINARY

AV Speed Atlas II 2 GIG
 7200 RPM 8ms Seek 512k Buffer **\$295**
 (Q32275) 5 Year Warr. INTERNAL ONLY

VIKING

4.5 GB (Q34550VK) **\$485**
 8.5ms Seek 512K Buffer 7200 RPM 5 Year Warranty

ATLAS II

9.1 GB (Q39100) **\$795**
 8ms Seek 1024K Buffer 7200 RPM 5 Year Warranty

STRATUS New Heights of Value & Performance

	INTERNAL	EXTERNAL
2.1 GB	\$225	\$275
3.2 GB	\$255	\$315
4.3 GB	\$295	\$355

9.5ms Seek 128K Buffer 5400 RPM 5 Year Warranty

ATLAS II Award Winning Reliability

	INTERNAL	EXTERNAL
2.2 GB (Q32275N)	\$295	\$355
4.5 GB (Q34550VK)	\$485	\$545
9.1 GB (Q39100N)	\$795	\$855

8ms Seek 1024K Buffer 7200 RPM 5 Year Warranty

VIKING Ultra Value and Performance

	INTERNAL	EXTERNAL
2.2 GB (Q32275VK)	\$375	\$425
4.5 GB (Q34550VK)	\$485	\$545
9.1 GB (Q39100VK)	\$795	\$855

8ms Seek 512K Buffer 7200 RPM 5 Year Warranty

Ultra SCSI Acceleration Cards

ATTO ATTO

Express PCI Ultra SCSI Single Channel..... **\$345**
 Dual Channel Express PCI Ultra SCSI 3 40 MB/Sec. **\$589**

ADAPTEC

PowerDomain 2940 UWM Single Channel PCI... **\$195**
 PowerDomain 3940 UWM Dual Channel PCI..... **\$339**

*with wide drive purchase

adaptec FireWire SPECIAL

ADAPTEC FireWire AHA 8945 Dual 1394 FireWire Ports and Wide Ultra SCSI Port **\$695**

Get a PowerRAID for Maximum Data Transfer Rates

MacUser 8/97

"The fastest array in this test, the ProDirect PowerRAID"

RAID Level 5 Available. Great for Servers!

At ProDirect, we work closely with drive manufacturers to identify and optimize key internal mode settings. This enables our PowerRAIDs™ to operate at peak efficiency. We call it "RAID-Tuning" and it works. The proof is in the award. AGAIN!

SPECIAL

Media 100 QX **\$1795**
 With Adobe Premiere PCI **\$1895**
 Media 100 QX alone **\$1895**

*with PowerRAID purchase

Seagate PowerRAID SC18

18GB CHEETAH SPEED DEMON!

This Raid features drives rotating at 10,000 RPM which greatly enhances the overall transfer rate of this 18 GB Raid.

	FIXED	REMOVABLE
	\$2995	\$3195

Seagate PowerRAID SC36

36GB CHEETAH AWESOME SPEED!

This Raid features drives rotating at 10,000 RPM which greatly enhances the overall transfer rate of this 18 GB Raid.

	FIXED	REMOVABLE
	\$5595	\$5995

Seagate PowerRAID SB36

36GB BARRACUDA MASSIVE SPEED

This Raid features the proven Barracuda technology recommended for use with most video editing systems

	FIXED	REMOVABLE
	\$5185	\$5685

Seagate ProDIRECT PowerRAID Avid

GB	DRIVES	ACCEL CHANNEL	FIXED	HOT-SWAP
8	Barracuda ST3471W	Single	1825	1995
18	Barracuda ST19171W	Single	2695	2895
36	Barracuda ST19171W	Single	5185	5685
54	Barracuda ST19171W	Single	7795	8295
72	Barracuda ST19171W	Single	9695	10495

HIGH SPEED TAPE BACK-UP

IN STOCK TODAY

Speedy Tape Drives Perfect for AV Work or Server ON THE FLY INSTANT BACKUP!

RETROSPECT 4.0 SOFTWARE INCLUDED

INCREDIBLE DLT 4000 150 MB/Min. **\$2989**

SPECTACULAR SPEED 50GB SONY AIT Up To 350 MB/Min. **\$3095**

BLISTERING DLT 7000 800 MB/Min. **\$7295**

AWESOME SPEED 30GB DLT 2000XT 120 MB/Min. **\$2575**

CAPACITY	MODEL	TRANSFER RATE	SALE
8 GB	HP 1599	90 MB/Min.	1145
8 GB	CTD8000	60 MB/Min.	795
8 GB	Sony 7000	90 MB/Min.	975
24 GB	HP1554 DDS3	120 MB/Min.	1445
24 GB	Sony 9000 DB3	120 MB/Min.	1245
48 GB	HP1553 DDS2	60 MB/Min.	2485
50 GB	Sony AIT SCS 3000	120 MB/Min.	3095
144 GB	HP1559 DDS3	120 MB/Min.	3995
150 GB	DLT™ 2500XT	150 MB/Min.	4895
210 GB	DLT™ 2700XT	150 MB/Min.	6535
200 GB	DLT™ 4500	180 MB/Min.	6525
280 GB	DLT™ 4700	180 MB/Min.	7995

REMOVABLE STORAGE DRIVES

IOMEGA 100 MB Removable with One Cartridge

External: **\$148**
 Internal PowerMac: **\$158**
 ZIP Cartridges **\$1.95 ea.**
 *12. ea. in 10-pack after rebate

IOMEGA 1GB Removable with One Cartridge

External: **\$399**
 Internal PowerMac: **\$298**
 JAZZ Cartridges **\$8 ea.**

SYQUEST SYJET

1.5 GB SyJet Cartridges **\$98 ea.**

CD Recorders & Players

Yamaha CDR 400 **\$585**
 4 Speed Recorder/Spd Player Huge 2 MB Buffer
 CRW 4260 CD Re-Writable Recorder **\$695**

Panasonic CDR 7502 4X8X **\$495**
 4 Speed Recorder/Spd Player Huge 2 MB Buffer
 CD-HD Mastering System Featuring Panasonic CDR 7502 & IBM UltraStar 2 GB AV Hard Drive **\$875**
 CD-RD Mastering System Featuring Panasonic CDR 7502 & Iomega 1GB Jaz Drive **\$975**

Pioneer 24x CDRom 90ms 3600/Sec. **\$165**
 Phillips 8x CD ROM **\$135**

10830 Nesbitt Ave South
 Bloomington, MN 55437

Orders: **800-524-9952**
 Hours: Monday-Friday 8AM-7PM
 International Orders: 612-884-0012

MEMORY HIGHEST QUALITY LIFE TIME WARRANTY

DIMMS 168PIN 60ns **SIMMS** 60ns

SIZE	VOLTS	PRICE
16 MB	\$42	\$46
32 MB	\$77	\$83
64 MB	\$139	n/a

new G3 SDRAM DIMMS

	PRICE
16 MB	\$54
32 MB	\$89
64 MB	\$295
128 MB	\$585

Apple Certified G3 Memory for New G3 PowerMacs

ProDirect Fax: 612-941-1109
 Toll Free Tech Support: 800-524-9952
 Internet: www.pdaisales.com
 E-mail: info@pdaisales.com



Your Macintosh® Catalog SuperStore™

PROUDLY SERVING MAC USERS SINCE 1986

Do more with your Mac with this money-saving utility bundle!

SpeedDoubler & StuffIt Deluxe
with FREE Aladdin FlashBack!

ONLY \$99⁹⁸
#72581

Connectix

'98 FINANCIAL BUNDLE

Save money, invest wisely, reduce debt, and more!

MacInTax Deluxe & Quicken Deluxe 98

BOTH ONLY \$59⁹⁸*
#74202

* After \$20 mfr. mail-in rebate for MacInTax Deluxe and \$20 mfr. mail-in rebate on Quicken Deluxe 98. For owners of previous versions of Quicken. Low Zone bundle price: \$99.98.

A quality 30-bit scanner for under \$150!

UMAX Astra 610s Flatbed Scanner

ONLY \$149⁹⁸
#53948

UMAX
The Magic of Color™



Detachable 2.7x zoom digital camera with built-in flash!



Dimâge V Digital Camera

ONLY \$498⁹⁸
#48901



The affordable way to shoot digital video AND photos!

Grayscale QuickCam for Macintosh

ONLY \$69⁹⁸
#72574



Fast color printing for the networked office!



HP DeskJet 870Cse Printer

ONLY \$399⁹⁸
#36156

The most affordable and portable storage solution!

Zip™ 100MB Drive

ONLY \$134⁹⁵
#91825



#52581 Iomega ZipPlus \$199.95

A value-priced monitor for multimedia applications



Nokia 17" Multimedia Monitor

15.9" viewable, .26mm

ONLY \$449⁹⁸*
#47499

*With purchase of any CPU.

#75609 Nokia 17" Multimedia Monitor. \$499.98

Just Announced at Macworld!



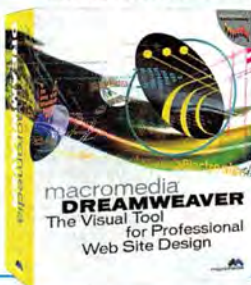
NEW FROM MACROMEDIA!

Web savvy, auto effects, publishing ease & more!

FreeHand 8

Upgrade **ONLY \$148⁹⁸**
#84242

Design Web Sites with the tool of your dreams!



macromedia Dreamweaver

ONLY \$298⁹⁸
#73486

Turns your Mac into a FAST, functional, PC!



SoftWindows 95 5.0 CD

ONLY \$88⁹⁸
#87440

INSIGNIA SOLUTIONS

SPECIALIZED SERVICE

Corporate Sales 1-800-258-0882
Government Sales 1-800-372-9663
Education Sales 1-800-381-9663

THE MAC ZONE • TRUSTED INTERNATIONALLY

Austria • Chile • Colombia • Denmark • France • Germany • Holland • Hong Kong
• India • Israel • Italy • Japan • Kenya • Mexico • New Zealand • Poland • Portugal • Singapore/Malaysia • Spain • Sweden • Switzerland • UAE/Middle East • United Kingdom • Venezuela

International Sales 1-425-430-3570

Copyright © 1998
The Mac Zone ®
is a registered trademark
of Multiple Zones International,
Inc. All rights reserved.



We Carry the Full Line of Apple® Macintosh® Computers

- Over 6000 Products to Choose From!
- Cool Bundles and Hot Specials!
- Low Prices Everyday!
- Overnight Delivery only \$3 (up to 2 lbs)

we're open
24/7 hours a day
days a week



Cutting-edge G3 Minitower!

Apple® Power Macintosh® G3/266MHz

ONLY
\$2999
#77038



Monitor sold separately.

266MHz PowerPC™ G3 processor
32MB RAM, expandable to 384MB
4GB hard drive
24X CD-ROM drive

- 512K Backside Cache
- 2MB VRAM
- Video input/output
- Built-in 10Base-T Ethernet

4.4 pounds - 2" thick and packed with power!

Apple® Macintosh® PowerBook® 2400c/180MHz

- 180MHz PowerPC™ 603e processor
- 16MB RAM, expandable to 48MB
- 1.3GB hard drive
- 10.4" active-matrix SVGA display
- Slots for two Type II PC Cards or one Type III PC Card
- Built-in SCSI, serial, ADB and IRDA ports



LOW PRICE!
NOW ONLY
\$2499
#74700

Palm-sized information management for the busy lifestyle!

Palm Pilot
PalmPilot Professional with Mac Pac

FREE GIFT!
with purchase
Call for details



16MB DIMMS

AS LOW AS
\$89⁹⁰

CALL FOR LATEST PRICES ON MEMORY.
ONLY \$369⁹⁸
#73523



State-of-the-art technology for an unbelievable price!

Apple® Power Macintosh® G3

- 233MHz PowerPC™ G3 processor
- 32MB RAM, expandable to 192MB
- 4.0GB hard drive
- 24X CD-ROM drive
- 66MHz system bus speed
- 117MHz backside cache
- 2MB Video SGRAM
- Video input/output
- Built-in 10Base-T Ethernet

ONLY
\$1999
#77039



Monitor sold separately.



ONLY
\$1499
#80897

Monitor sold separately.

604e power to fit your budget!
Apple® Power Macintosh® 7300/180

- 180MHz PowerPC™ 604e RISC processor
- 16MB RAM, expandable up to 512MB
- Fast SCSI 2GB hard drive
- 12X CD-ROM drive
- 16-bit stereo audio input and output
- 2MB VRAM expandable to 4MB
- 3 PCI expansion slots

CALL US TOLL-FREE!
or **FAX** your order to 425-430-3500
Shop online at
www.maczone.com

SOURCE CODE
MW803

1-800-436-0606

Circle 71 on your reader service card

A NASDAQ® COMPANY Ticker Symbol: MZON

MACWORLD March 1998 133

As Much As \$600 IN REBATES

We Will Beat Any Computer Price!!!

We'll beat any price from any
Call us before you order from

New From Apple!

NEW! All-in-One Power Mac 5500

225MHz POWERPC 603e/32MB RAM
2GB HARD DRIVE/24X CD-ROM
BUILT-IN 15" MULTIPLE/SCAN DISPLAY

\$1,899! #26396



NEW! 250MHz 20th Anniversary Power Macintosh

250MHz POWERPC 603e/32MB RAM
2GB HARD DRIVE/8X CD-ROM/33.6 MODEM
BUILT-IN 12.1" ACTIVE MATRIX COLOR DISPLAY

\$3,999! #26395

NEW 1400cs/166MHz

Also Available from MacMall

- #26394 PowerBook 1400cs/166MHz 603e/
16MB RAM/ 1.3GB Hard Drive/12X CD/
11.3" Dual Scan display **\$2,299**
- #25914 PowerBook 1400c/133MHz 603e/16MB RAM
1.3GB Hard Drive/8X CD/
11.3" Active Matrix display **\$2,699**
- #25912 PowerBook 1400c/166MHz 603e/16MB RAM
2GB Hard Drive/8X CD/
11.3" Active Matrix display **\$2,999**

New!

**Up to
166MHz**



Price Drops on PowerBook 3400!

PowerBook 3400 Series

- #25920 PowerBook 3400c/200MHz/16MB/
2GB HD/12X CD/33.6 Modem/
12.1" Active Matrix Display
(shown) Was \$4,499 **Now \$3,799**

- #25890 PowerBook 3400c/240MHz/16MB/
3GB HD/12X CD/33.6 Modem/
12.1" Active Matrix Display
Was \$5,499 **Now \$4,499**

New Macintosh PowerBook G3!

250MHz PowerPC G3/32MB RAM/
5GB Hard Drive/20X CD-ROM/
33.6 Modem/12.1" Active Matrix Display

\$5,699! #25855

- only
- 2MB VRAM; Dedicated video controller
- Video-in with Zoomed video
- Mac OS 8 included



- ▶ Built-in 10Base-T Ethernet and 33.6Kbps modem
- ▶ Video-in with Zoomed video

Power Macintosh 6500!

- #25828 Power Macintosh 6500/250MHz/
603e/32MB RAM/4GB HD/
24X CD-ROM/56K modem **\$1,999**
- #25829 Power Macintosh 6500/275MHz/
603e/32MB 6GB HD/24X CD/
56K modem/Zip Drive **\$2,499**
- #25893 Power Macintosh 6500/300MHz/
603e/64MB RAM/4GB HD/12X CD
/33.6 Modem/Zip Drive **Now \$2,299**
after \$200 Mac Mall Instant Rebate.
- #25830 Power Macintosh 6500/275MHz/
603e/48MB RAM/6GB HD/24X CD/
56K modem/Microsoft Office/Zip Drive **\$2,799**

Monitor sold separately on all models.



**Up to
300MHz**

Memory

Starting
as low as
\$2.50
per MB



#65416 Prices subject to change.
Please call for most current pricing.

MacMall EXCLUSIVE!



Mac OS 8 & Speed Doubler 8 Plus—FREE RAM Doubler 2!

\$99.99
All Three Titles Only
#11291

Price reflects \$30 mail-in upgrade rebate for owners of Mac OS 7.5. Price before rebate is \$129. Must ask for free RamDoubler 2 when ordering. #11441

New Power Macintosh G3!

233MHz POWERPC G3/32MB RAM/
4GB HARD DRIVE/24X CD-ROM

\$1,999! #25852 (desktop model)

- #25853 Power Macintosh G3/266MHz G3/32MB RAM/
4GB Hard Drive/24X CD-ROM
Zip Drive/Desktop model **\$2,399**
- #25854 Power Macintosh G3/266MHz G3/32MB RAM/6GB
Hard Drive/24X CD-ROM/Zip Drive/Video In & Out/
Mini-Tower (shown above) **\$2,999**

NEW Iomega® ZipPlus™ Drive!

- ▶ Includes 100MB disk
- ▶ 5 CD titles included
- ▶ SCSI/Parallel

\$199.99 #14647



Iomega® 1GB Jaz™ SCSI Drive

- ▶ w/One
FREE
Cartridge

\$289.99 #15813
(factory refurbished) Limit 5 per
customer. While supplies last!



Rasterops MC6215 17" Display

- ▶ 15.9" viewable
- ▶ 1152 x 870
max. resolution
- ▶ 28mm dot pitch

\$499.99 #98057



FREE
Sony Speakers
w/any monitor
purchase from MacMall
\$9.99 shipping and
handling applies.



QUARK® NEW! QuarkXPress 4.0

- ▶ Bezier boxes using
illustration tools
- ▶ Character style sheets
- ▶ Interrupt/force screen
redraw
- ▶ ICG based color
management

\$699.99 #23098



SONY® Sony Zip Disks 100MB Mac 6pk

\$9.99 per disk
after \$10 mail-in rebate for 6-pk.
6-pk price before rebate is \$59.
Ask for #99743



D-220L Digital Camera, 2MB

- ▶ 640 x 480
- ▶ All glass aspherical
F2.8 autofocus lens
- ▶ LCD Display
- ▶ Auto flash w/red
eye reduction

\$499.99 #14494



NEW Macromedia Dreamweaver

- ▶ Roundtrip control between
WYSIWYG and Source HTML
- ▶ Absolute positioning of layers

\$289.99 #25290



We ship FedEx
Federal Express

**\$1.8 Billion in Available
Inventory!**

Over 45,000 Products!

Custom Configuration!

**Fastest Overnight
Delivery!**

with your CPU purchase! of \$1000 or more.

authorized catalog reseller on any CPU we offer. anyone else. We want your business! Cannot be combined with Rebate offer.

MacMall Exclusive Instant Rebates!

Save up to \$600!

Save up to \$250 with MacMall Exclusive Instant Rebates on Apple, Motorola and Umax Systems!

No Mail-in Hassles! No Quantity Limits!

Save up to \$400 in Apple Mail-in Rebates!

And If That's Not Enough—Call Us! We Want Your Business!

Call your account representative for details.

Apple Multimedia Power!



Power Macintosh 8600

- #25826 Power Macintosh 8600/250MHz 604e/32MB RAM, 4GB HD Drive 24X CD/Zip Drive, (model shown at above) **Now \$2,399** after \$300 Mac Mail instant rebate.
- #25915 Power Macintosh 9600/300MHz/604e/64MB RAM, 4GB HD, 24X CD-ROM/Zip Drive after \$300 Mac Mail instant rebate. **Now \$3,499**
- #22902 Power Macintosh 9600/200MHz/Dual Processor/604e/32MB RAM/4GB HD/12X CD-ROM after \$200 Mac Mail instant rebate. **Now \$3,299**

Monitor sold separately on all models.



Great Deals from MacMall!

Power Computing 15" Multimedia Display
 > 13.9" viewable image size
 > 1024 X 768 max. res. @75Hz
 > .28mm dot pitch

\$299⁹⁹! #98033

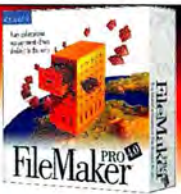
#98034 Power 17" Display was \$549 **Now \$499⁹⁹** While supplies last!

CLARIS

FileMaker Pro 4.0

- > Powerful data management
 > Built-in CGI tools

\$89⁹⁹! #14843 (upgrade)



PalmPilot Professional Edition w/1MB RAM

- > 5.7 oz and 4.7" long
 > Includes: Date Book, Address Book, To Do List, Memo Pad, Security, Games and Hot Sync

for only **\$348⁹⁹** #15244



Quicken Deluxe 98

Get Quicken Deluxe & New MacInTax Deluxe

Together For Only

\$59⁹⁹*

Intuit

#24627

*After \$20 Quicken Deluxe Mfr. mail-in rebate for previous Quicken users and \$20 MacInTax Deluxe Mfg. mail-in rebate. Prices before rebate: \$59 and \$49.



UMAX[®]
Computer Corporation

SuperMac C600/200MHz

vPowerPC[™] 603e
 16MB RAM/2.1GB HD
 8X CD-ROM
 33.6Kbps modem

\$1,195!



only #25926

Also Available from MacMall

- #25902 UMAX SuperMac C600 vPC/240MHz 603e/32MB RAM 3.0GB Hard Drive/24X CD ROM Includes Insignia's Virtual PC **\$1,495**
- #25903 UMAX SuperMac J700 233MHz 604e/24MB RAM 2 GB HD/24X CD ROM/33.6Kbps modem/Mac OS 8 **\$1,995**

All monitors on UMAX systems are sold separately

FREE!

Marathon II Durandal w/any Software purchase from MacMall
 Ask for #92532, 2" shipping and handling fee.



MICROTEK



Includes Kais PhotoSoap from MetaCreations and MicroFrontier Color

ScanMaker V310

- > 30-bit, flex ScanLid
 > Zero Reflections

Only **\$149⁹⁹**

#23929

HP DeskJet 870Cse Printer

- > Up to 8ppm black at 600dpi
 > Up to 4ppm color at 600 x 300 dpi
 > Network capable
 > Mac/PC

\$299⁹⁹

#82695



New Low Price

56K Data/Fax Modem

- > PnP installation
 > Caller ID
 > FREE Data/Fax software

\$99⁹⁹

#95195

Incredible Price!

NEW! SoftWindows 95 5.0

Upgrade from 1.0 or 4.0 for only

\$99⁹⁹

#25574



INSIGNIA



Conflict Catcher 4.0

for only

\$39⁹⁹

#25054

w/ Mac OS 8 purchase

Introducing

uBid—our new online auction!
 Bids Starting as low as \$7
 See page 9 for details

uBid Online Auction

Order Any Time! **1-800-217-9492**
 Open 24 Hours.

Order Today by 11 pm EST—Get It Tomorrow by 10:30 am. Check out our Web site www.macmall.com

We do our best to be accurate but occasionally mistakes occur. We are not responsible for any typographical, photographic or technical errors. Products and packaging may differ from stock available at time of shipment; we reserve the right to substitute equivalent items.

Use Source Code:
#ZMWD831

MacMall
 The Mall With It All...For Less!



Philips OMNIWriter CD-RW
External CD-R/Writable Drive
• Play, record and back-up music, video and data • Writes CD-Rs, reads CD-ROMs, writes CD-RWs

\$499⁹⁹ (PHI OMNI/40)

Panasonic KX-LD742 Portable Player (PAN KXLD742) **\$189.99**
Sony PRD-650 Player (PowerBooks) (SON PRD-650MC) **\$299.99**
Ricoh MediaMaster CD-Rewritable (RCD 332300) **\$599.99**

Printers



Hewlett-Packard DeskJet 870Cse
Color Inkjet Professional Series Printer
• 8-ppm black and 4-ppm color
• PC/Mac compatible
• RISC • HP RealLife Imaging

\$299⁹⁹ (HP C456SA)

Hewlett-Packard LaserJet 6MP (HP C3982A) **\$949.99**
Apple LaserWriter 12/640PS (APP M3977LL/A) **\$1599.99**
Hewlett-Packard LaserJet 4MV (HP C3142A) **\$2699.99**

Monitors



Panasonic PanaSync P15
15" Digital Color CRT Display
• 0.27mm dot pitch • 14" viewable image • 1,280 x 1,024 maximum resolution NI • AGRAS coating for easy-to-view images that don't tire the eyes • On-screen adjustment

\$299⁹⁹ (PAN P15)

Panasonic PanaSynch S70 17" (16" VHS) (PAN S70) **\$499.99**
AppleVision 750-AV 17" Display (16.1" VHS) (APP M5239LL/A) **\$949.99**
AppleVision 850-AV 20" Display (19" VHS) (APP M5228LL/A) **\$1999.99**

J&R COMPUTER WORLD



One of America's Largest Authorized Apple Dealers



Exclusive FREE G3 Upgrade Offer!

Apple® Power Macintosh® G3/233 32MB/4GB/24xCD

• 233MHz PowerPC™ G3 • 32MB RAM (+32MB*)
• 4GB IDE hard drive • 24x-speed CD-ROM drive
• ATI 3D RAGE II+ 64-bit graphics • Built-in 10Base-T ethernet • Mac® OS8 • Monitor sold separately

\$1999⁹⁹ (APP M6141LL/A) (PNY PAPMG332CS)



Apple Power Macintosh G3/266 32MB/4GB/24xCD/100MB Zip™ Drive

• 266MHz PowerPC™ G3 • 32MB RAM (+32MB*)
• 4GB IDE hard drive • 24x CD-ROM • 100MB Iomega Zip™ drive • Built-in 10Base-T ethernet • ATI 3D RAGE II+ 64-bit graphics • Monitor sold separately

\$2399⁹⁹ (APP M6202LL/A) (PNY PAPMG332CS)



Apple® Power Macintosh® G3/266 32MB/6GB/24xCD/100MB Zip™ Drive

• 266MHz PowerPC™ G3 • 32MB RAM (+32MB*)
• 6GB IDE HD • 100MB Iomega Zip™ drive • ATI 3D RAGE II+ 64-bit graphics • 2MB SGRAM video • 24x CD-ROM • Monitor required

\$2999⁹⁹ (APP M6142LL/A) (PNY PAPMG332CS)



FREE PNY 32MB Memory Upgrade with the Purchase of any Apple G3 Desktop above!
\$249⁹⁹ Value! (offer good until 2/28/98)



Apple® PowerBook® G3/250 32MB/5GB/20xCD

• 250MHz PowerPC™ G3 • 12.1" active-matrix • 32MB RAM • 5GB hard drive • 20x CD-ROM

\$5699⁹⁹ (APP M5993LL/A)

PowerPC and the PowerPC logo are trademarks of International Business Machines Corporation, used under license from Apple. Apple, the Apple logo, Macintosh, Power Macintosh, PowerBook, Apple SuperDrive & AppleDesign are registered trademarks of Apple Computer, Inc. ©1998 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, LaserWriter, Macintosh, Power Macintosh, PowerBook, and QuickTake are registered trademarks of Apple Computer, Inc. All other trademarks are the property of their respective owners. All Apple products are designed to be accessible to individuals with disabilities. For more information in the U.S., call 1-800-541-2333 or 1-800-555-4773.

Digital Cameras



Minolta Dimage V Digital Camera Kit

• Rotating, detachable 2.7X zoom lens • 1.8" color LCD finder/monitor • 640 x 480 CCD with square pixels • Built-in flash • Adobe PhotoDeluxe for Windows and Mac • AC adapter

\$499⁹⁹ (MIN DIMAGE/KIT)

Casio QV-70 (CAS QV70) **\$299.99**
Casio QV-200 (CAS QV200) **\$399.99**
Olympus D-320L (OLM D320L) **\$699.99**

SyQuest SyJet Drive



SyQuest® SyJet™ 1.5-Gigabyte External Cartridge Hard Drive

• Removable disk cartridges hold up to 1.5GB of data • Small, lightweight and easily portable • Comes with one 1.5GB cartridge and cables for PC and Macintosh

\$299⁹⁹ (SYQ SYJET15E-38)

Spare SyJet 1.5GB Cartridge (SYQ SYJET-005) **\$79.99**
SyQuest SyJet 1.5GB Cart 3-Pack (SYQ SYJET-006) **\$199.99** (cartridges preformatted for Mac)

UMAX Scanners



UMAX Astra 610S 30-Bit Color Scanner for PC and Macintosh

• 300 x 600 dpi single-pass flatbed scanner • "Push Button" scanning • Includes SCSI cable and interface

\$149⁹⁹ (UMX AST610DUOX)

Astra 1200 Deluxe for Mac & PC (UMX AST1200DXX) **\$249.99**
Astra 1200S w/ full Photoshop 4.0 (UMX AST12MACPS) **\$499.99**
PowerLook-II Mac Pro 2 with full Photoshop 4.0 and transparency adapter (UMX PVIIMACPRO2) **\$1499.99**

J&R CORPORATE SALES BUSINESS LEASING:

No Money Down, No Payments for 30 Days!

- 1) Allows flexibility to add or upgrade equipment at any time
- 2) Conserves your capital
- 3) Saves time, credit decisions are quick and easy
- 4) Covers entire packages—equipment, software, service contracts, and peripherals

*All lease payments are exclusive of applicable taxes. Minimum leasing payment is \$50 per month. All leases are subject to credit approval and require an administrative fee of \$49.95 to be billed on the first invoice. Leasing program administered by Dana Commercial Credit. Leases are Business Leases, \$0 down, 36 month term with \$1.00 purchase option.



Call J&R Corporate Sales
1-800-221-3191 or 1-212-238-9080

(\$1,400 Minimum Lease Amount)

Software



Broderbund Where In Time Is Carmen Sandiego?
\$29⁹⁹

All Dogs Go To Heaven Act. Ctr. by MGM/UA **\$22.99**
Barbie Fashion Designer by Mattel **\$34.99**
CyberSound Studio (3.0) by CyberSound **\$44.99**
JumpStart Typing by Knowledge Adv. **\$24.99**
Riven-The Sequel to Myst by Broderbund **\$49.99**
You Don't Know Jack- Huge by Berkeley **\$32.99**



Intuit MacInTax 1997 Deluxe
\$34⁹⁹ after \$15 mail-in rebate

Encarta 98 Encyclopedia Dlx. by Microsoft **\$69.99**
Eudora Mail Pro (3.1.1) by Qualcomm **\$29.99**
Norton Utilities (3.5) by Symantec **\$89.99**
Organizer (2.0) by Claris **\$69.99**
QuarkXPress (4.0) by Quark **\$749.99**
Speed Doubler (8.0) by Connectix **\$54.99**

Order Your FREE Catalogue Now!



Global Village TelePort 56K x2 External Data/Fax Modem 56Kbps Downloads **\$159⁹⁹**
Apple PowerBook® 3400c/200 16MB RAM 200MHz 12.1" active matrix **\$3799⁹⁹**
Apple Mac OS8 \$30 upgrade for users of Mac OS7.6 (expires 7/31/98) **\$99⁹⁹**

Order Code: MW0398

To Order Toll Free and Receive a Free Catalogue MAIL ORDERS: J&R Computer World
800-221-8180

• 59-50 Queens Midtown Expressway • Maspeth, Queens NY 11378
CALL 1-800-221-8180 for shipping information. DO NOT SEND CASH.

Not responsible for typographical or pictorial errors. Some quantities may be limited. All merchandise brand-new, factory-fresh and 100% guaranteed!

24 Hours, 7 Days, Anywhere In The USA or FAX us at 1-800-232-4432

Circle 282 on reader service card



EST 1990

The LLB Company, Inc.

1-800-848-8967



EST 1990

Website: www.llb.com International: 425.746.0229 Fax: 425.746.5168

DESKTOP MEMORY UPGRADES

168-PIN SDRAM			168-Pin DIMMs			EDO 3.3V 60ns DIMMs			EDO 5v 60ns DIMMs			72-Pin SIMMs			30-Pin SIMMs		
G3 Systems			PowerMac Series-60ns			Starmax & Pm 4400			Power Base Series			PowerMac 6100...			Mac Ilci, si, se, Ilcx...		
Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price
128MB	128664SD	\$605	128MB	128664	\$720	64MB	64764EDO3.3V	\$135	64MB	64764EDO5V	\$135	32MB	32632	\$70	16MB	1601	\$115
64MB	64764SD	\$295	64MB	64764	\$135	32MB	32764EDO3.3V	\$80	32MB	32764EDO5V	\$80	16MB	16732	\$35	8MB	8888	\$42
32MB	32764SD	\$105	32MB	32764	\$70	16MB	16764EDO3.3V	\$45	16MB	16764EDO5V	\$43	8MB	8032	\$25	4MB	4000	\$18
16MB	16764SD	\$65	16MB	16764	\$42	8MB	8764EDO3.3V	\$35	8MB	8764EDO5V	\$38	4MB	4032	\$20	2MB	2000	\$16

POWERBOOK MEMORY UPGRADES

POWERBOOK G3			POWERBOOK 3400			POWERBOOK 2400			POWERBOOK 2300			POWERBOOK DUO			POWERBOOK 190		
Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price
128MB	PB3400-128G3	\$585	128MB	PB3400-128	\$529	64MB	PB2400-64	\$382	48MB	PB2300-48	\$288	36MB	PBDUO-36	\$245	32MB	PB190-32	\$155
64MB	PB3400-64G3	\$240	96MB	PB3400-96	\$499	32MB	PB2400-32	\$186	36MB	PB2300-36	\$245	28MB	PBDUO-28	\$239	16MB	PB190-16	\$116
32MB	PB3400-32G3	\$130	64MB	PB3400-64	\$270	16MB	PB2400-16	\$90	20MB	PB2300-20	\$160	20MB	PBDUO-20	\$128	12MB	PB190-12	\$70
16MB	PB3400-16G3	\$70	32MB	PB3400-32	\$130	8MB	PB2400-8	\$40	16MB	PB2300-16	\$115	14MB	PBDUO-14	\$115	8MB	PB190-8	\$65
			24MB	PB3400-24	\$115							12MB	PBDUO-12	\$109			

POWERBOOK 5300			POWERBOOK 1400			POWERBOOK 500			POWERBOOK 150		
Module	Item#	Price	Module	Item#	Price	Module	Item#	Price	Module	Item#	Price
48MB	PB5300-48	\$241	24MB	PB1400-24	\$117	32MB	PB500-32	\$143	28MB	PB150-28	\$219
32MB	PB5300-32	\$160	16MB	PB1400-16	\$89	16MB	PB500-16	\$80	20MB	PB150-20	\$160
16MB	PB5300-16	\$104	8MB	PB1400-8	\$60	8MB	PB500-8	\$72	8MB	PB150-8	\$70
8MB	PB5300-8	\$65				4MB	PB500-4	\$62	4MB	PB150-4	\$45

PRINTERS & SCANNERS



UMAX
Computer Corporation

\$228

Astra 610s \$148
Astra 1200 w/Full PS & Trans \$579



EPSON
Stylus 600 Inkjet

\$319

Stylus 800 Inkjet \$399
Expression 636 Executive \$805
Stylus Color 1520 \$807
Stylus Color 3000 \$1922



**HEWLETT
PACKARD**

Laserjet 4MV 600 DPI \$2795
Laserjet 6MP 600 DPI \$927

MODEMS



GLOBAL VILLAGE
COMMUNICATION

As Low As \$159

Teleport 56 K56 Flex Ext \$159
Teleport 56K X2 Ext \$157
Powerport 56k PCMCIA/Enet \$388

DIAMOND

SUPRA Express 56e K56 Flex Sp \$149
SUPRA Express 56e K56 Flex Ext \$137
SUPRA Express v.34 Ext 14.4 S/R \$89



Robotics

Sportster 56K X2 Ext Fax \$214
Sportster 33.6 Ext w/voice(14.4 Fax) \$99
Sportster 56K XJack PCMCIA \$249

MONITORS



NEC

NEC A500 15" Multisync \$329
NEC A700 17" Multisync \$565
NEC E500 15" Multisync \$404

SONY

SO 200SF 17" Multiscan \$799
SO 300SF 20" Triniton \$1238

ViewSonic

VS 15VGA 15" Optique \$277
VS G771 17" Optique \$548

UMAX SUPERMAC SYSTEMS

Computer Corporation

STATE OF THE ART PERFORMANCE WITH AFFORDABLE PRICING!

SuperMac	Processor/Speed	Price
UCC 500L-200LT	603E 200MHz (LT)	\$997
UCC 600L-240LT	603E 240MHz (LT)	\$1397
UCC 600L-200	603E 200MHz	\$1195
UCJ 700L-180	603E 180MHz	\$1775
UCJ 700L-233	604E 233MHz	\$1945
UCS 900L-200	604E 200MHz	\$2435
UCS 910E-250	604E 250MHz (E)	\$4246
UCS 910E-250D	604E 250MHz (DP)	\$6759

DRIVES



LACIE

Q 2.1 GB (Ext) 5400RPM \$349
Q 4.3 GB (Ext) 5400RPM \$508
Q 6.4 GB (Ext) 7200RPM \$635
Q 9.1 GB (Ext) 7200RPM \$1149
LaCie 24X Ext CD-Rom Drive \$199



\$634

Zip Drive w/Disk \$149

NETCOM

1 MONTH OF FREE INTERNET SERVICE & \$40 WORTH OF CD-ROM SOFTWARE ONLY

\$199

WITH ANY LLB PURCHASE

newertech

MAXPOWER PRO

\$1092

CITATION 233MHZ 640E UPGRADE \$443

Electronic Orders: E-Mail: sales@llb.com · Web Site: Under Reconstruction...Please bear with us.... · PO's are accepted upon approval

· All major credit cards accepted and charged when order is shipped · No surcharge on credit cards · Prices subject to change

· Open 6am to 7pm M-F, 8am to 1pm Sat. PST · Returns subject to restocking fee · Not responsible for errors · We welcome International orders

· Orders received before 8:00p.m. EST weekdays shipped same day

1-800-848-8967



New! Apple Power

StarMax 5000/250MHz Mini-tower Systems

- 250MHz or 275MHz PowerPC 603e processor
- 32MB RAM (expandable to 160MB)
- 2.5 GB internal hard disk drive
- 512K Level-2 cache
- Up to 100Base-T network connection built in
- 16X CD-ROM drive
- Keyboard and mouse

StarMax 5000, 250MHz,
32MB, 2.5GB HD,
10 Base-T CPU 0912

StarMax 5000, 275MHz,
32MB, 2.5GB HD,
10/100 Base-T CPU 0908

\$1599

\$1699

StarMax 5000 Series
Includes a MEGA BUNDLE of
software & CD titles
Including Adobe Acrobat, Norton Utilities,
SAM(Anti-Virus), Conflict Catcher,
FWB Toolkit and Mac OS.



AS LOW AS
\$1599!

LIMITED QUANTITIES!

16X
CD-ROM
DRIVE!

Up to
275MHz!



Monitor sold separately.

Power Mac 8600/9600!



Monitor sold separately.

- 250-350MHz PowerPC 604e processor
- 32MB-64MB RAM, expandable up to 768MB
- 4.0GB hard drive
- 24X CD-ROM drive
- 2MB-8MB VRAM
- Iomega 100MB Zip drive

- Power Macintosh 8600/250MHz
32MB/4GB/24XCD/Iomega Zip Drive
CPU 0850 While supplies last... ONLY **\$2599**
- Power Macintosh 8600/300MHz
32MB/4GB/24XCD/Iomega Zip Drive
CPU 0784 ONLY **\$3099**
- Power Macintosh 9600/300MHz
64MB/4GB/24XCD/Iomega Zip Drive
CPU 0785 ONLY **\$3799**
- Power Macintosh 9600/350MHz
64MB/4GB/24XCD/Iomega Zip Drive
CPU 0786 ONLY **\$4499**

Apple PowerBooks

PowerBook 1400C/166MHz/16MB RAM/
1.3GB HD/12X CD-ROM Drive/11.3" Dual-
Scan display. CPU 0990...Only \$2299.

PowerBook 1400C/166MHz/
16MB RAM/2.0GB HD/
8X CD-ROM Drive/
11.3" Active Matrix display.
CPU 0745...Only \$2999.

PowerBook 3400C/200MHz/16MB RAM/
2.0GB Hard Drive/12x CD-ROM shown.

as low as
\$2299!

PowerBook 3400

- 200 or 240MHz PowerPC 603e processor
- 16MB of RAM (expandable to 144MB)
- Internal 2 or 3GB hard disk drive
- Internal 12X CD-ROM ■ 256K Level-2 cache

- PowerBook 3400C/200MHz 16MB RAM/2.0 GB Hard Drive/
33.6 modem/10Base-T Ethernet/12XCD CPU 0670Only **\$3799**
- PowerBook 3400C/240MHz 16MB RAM/3.0 GB Hard Drive/
33.6 modem/10Base-T Ethernet/12XCD CPU 0610 Was ~~\$6499~~...Only **\$4499**

MacWAREHOUSE

3 Ways to Order:

1. Phone: 1-800-434-3035
2. FAX: 1-732-942-2502
3. Online: www.warehouse.com

1. Our sales staff is ready to take your order 24 hours a day, 7 days a week.
2. We accept the following major credit cards: Visa, MasterCard, Discover Card/NOVUS, AmEx. Your credit card will not be charged until each item is shipped (no surcharge).
3. CT, IL, NJ, and OH residents add applicable sales tax.
4. Overnight delivery just \$4.95 per order up to 3 pounds. For all orders over 3 pounds, shipping is \$4.95 plus \$1.25 per pound or fraction thereof. (Example: a 4 pound order is \$6.20). Please add an additional handling charge of \$3.00 for all orders under \$50.00.

5. Place your order for "in-stock" items up to 12:00 midnight(ET) (weekdays), and we will ship same day for overnight delivery (barring system failure, etc.).
 6. Many of our products come with a 30-Day Money Back Guarantee. All items we sell come with the MacWAREHOUSE 30-Day Guarantee Against Defects.
- © Copyright 1998 Micro Warehouse, Inc. MacWAREHOUSE® is a division of MicroWarehouse, Inc. MacWAREHOUSE® and MicroWAREHOUSE® are registered trademarks and Data Comm WAREHOUSE and MacSystems WAREHOUSE are trademarks of Micro Warehouse, Inc. Apple, the Apple logo, Mac and Macintosh are registered trademarks of Apple Computer, Inc. Item availability and price subject to change without notice. We regret that we cannot be responsible for typographical errors. All prices shown in U.S. dollars.

30 DAY Money Back GUARANTEE
30-DAY ★ Guarantee Against Defects

20th Anniversary Mac!

- 250MHz PowerPC 603e Processor
- 32MB RAM (exp. to 128MB)
- 2.0GB Hard Drive
- 4X CD-ROM Drive
- 12.1" Active Matrix color display



ONLY
\$3999!

Ask for Item# CPU 1011

WOW! 1440 DPI!

Epson Stylus Color 600 Printer

Stylus Color 800 Printer (shown) Item # PR12127

- 1440 x 720 dpi
- up to 7ppm color

ONLY **\$399.95** Item# PR12126

ONLY \$269!

Canon BJC-4550

ONLY **\$299.95!** Item# PR11766

- Prints on paper up to 11" x 17"
- 720 x 360dpi
- 50ppm black/1ppm color
- 1 Year warranty

Astra 600S Color Scanner

AS LOW AS **\$169.95!**

Adobe PhotoDeluxe and Presta! PageManager software.

- 30-bit single-pass color CCD
- 300 x 600 dpi max 4800
- 8.5 x 14" legal scanner

Item# INP 1145

UMAX

100MB Zip drives

ONLY **\$139.95!** Item# DRI 1050

100MB Zip Disks

Ask for MED 0165

1-9 \$19.95ea 10-19 \$16.95ea 20+ \$12.99ea

*Disk includes Zip Tools Software

Prices SLASHED up to \$500!

Apple Power Mac 7300

NOW ONLY **\$1499!**

was \$1999 While supplies last

- 180MHz PowerPC 604e Processor
- 16MB RAM, exp. to 512MB
- 2.0GB Hard Drive

Ask for Item# CPU 0571

Power Mac 7300/200MHz
32MB RAM/2.0GB Hard Drive/12XCD
CPU 0572 was ~~\$2499~~ While supplies last. NOW ONLY **\$1799!**

ORDER ONLINE! and Get FREE Software!

www.warehouse.com

Choose one of these software packages when you place an online order with MacWAREHOUSE!

*Limit one per customer
\$3.95 shipping & handling.
Shipped in promotional packaging.
While supplies last.

Upgrade your G3

AS LOW AS **\$99.95!**

with the latest DIMMs Now!

For 16MB upgrade for G3-PowerBook ask for Item# CHP 0547 only \$99.95.

Mac G3 Series

New!

Apple G3 Systems:
The **FASTEST**
Mac Processor
Ever!

Mac OS
Systems
As low as

\$999!*

*UMAX C500LT/200MHz
Item# CPU 0836
shown below.

UMAX
C500LT/200MHz

- 200MHz PowerPC 603e Processor
- 16MB RAM • 1MB VRAM
- 2.0GB Internal HD • 8X CD-ROM Drive
- 2 PCI Expansion Slots • 256 Level-2 Cache
- Extended Keyboard and Mouse

ONLY \$999!

Ask for Item#
CPU 0836

Monitor sold
separately.

266MHz!

G3
POWERPC
PROCESSOR

Power Mac G3 Mini-tower –
266MHz/32MB/6.0GB HD/
24X CD/Zip Drive
Ask for item# CPU 0958

\$2999

New!

Apple PowerBook G3

- 250MHz PowerPC G3 Processor
- 32MB RAM
- 5.0GB Hard Drive
- 20X CD-ROM Drive
- 512K Level-2 Backside Cache
- 33.6 Modem

Item# CPU0961: . . . **\$5699**

**The Fastest
Notebook on the
Planet!**

**Apple Power Mac
G3 Desktop System**

As low as
\$1999!



- 233 or 266MHz PowerPC G3 Processor
- 32MB RAM (exp 192MB)
- 4.0GB HDD
- 24X CD-ROM Drive
- 512K Level-2 Backside Cache
- Iomega 100MB Zip Drive (on 266MHz model)

Power Mac G3 Desktop/233MHz 32MB RAM/
4.0GB HD/24X CD Item# CPU0956:

\$1999

Power Mac G3 Desktop/266MHz 32MB RAM/4.0GB HD/
24X CD/100MB ZIP Drive Item# CPU0957:

\$2399



Monitor sold separately.
Model shown is Power Mac G3 266MHz.

NEW!



FileMaker PRO 4.0

New Web Features!

Upgrade
Only **\$99.95!***

Item#
UPG 0722

*Ownership of prior version ACT US 4th Dimension,
Microsoft FoxPro, ProVIEW Panorama, Symantec ACT or
Claris FileMaker PRO is required.



QuarkXPress 4.0

For
Only **\$699.95!**

Item#
QTP0557
(Mac CD-ROM)

- 11 movable palettes for fast access & control
- Enhanced item and content tools for selecting multiple items in content mode or applying picture styles in item mode
- Easily switch among shape types at any time

**Olympus D-320L High-Resolution
Digital Camera**

- Resolution up to 1024 X 768
- 2MB Storage
- 2.0" LCD color monitor

Accessories Kit includes: AC
Adapter and Vinyl Carrying
Case. ACC 2978: \$119.95

Only
\$699!

Item# INP 1304



RIVEN
THE SEQUEL TO MYST

Riven
The Sequel to Myst

Journey through vast, awe-inspiring
landscapes but be forewarned,
nothing is quite as it seems.

Only **\$49.95!**

Item#
ENT1532

Iomega 1.0GB JAZZ DRIVE!

As low as
\$249.95!*

Ask for Item# RDRI 1119.
Internal drives also available.
Call for configurations.

Jaz Drive 3.5" Cartridges, Item #MED 0177:
1-4: \$124.95ea/5-9: \$99.95ea/10+: \$89.95ea
*Refurbished by the manufacturer to meet original factory specifications

NEW! JAZZ 2GB DRIVE
Now with 2GB cartridge capacity!

Jaz 2GB Internal: \$549.95
(Call for configuration)
Jaz 2GB External:
DRI 2300: \$649.95 each
2GB Cartridges:
MED0508: \$169.95 each



Includes
First 1.0GB
Cartridge!



MacWAREHOUSE

To order, call
toll-free 24 hours a
day, 7 days a week

1-800-434-3035

Your #1 Source for Apple Products!

Circle 150 on reader service card

Call
For A **FREE**
CATALOG!



CLUBMAC

SHOCKS

PRICES SLASHED ON Quantum & Seagate

ONLY \$189

OUTSTANDING DEAL!




ULTRASTAR ES

512K CACHE
5400 RPM
Internal

BARRACUDA 4XL 4.5GB

8.5MS Access
7200 RPM
Internal

ONLY \$579

Quantum VIKING
4.5GB \$399
7200 RPM Internal

Quantum ATLAS II
9.1GB \$779
7200 RPM Internal

Quantum STRATUS
6.4GB \$349
5400 RPM Internal

Seagate CHEETAH
4.5GB \$779
10000 RPM Internal



HARD DRIVES

Quantum					
Description		Quantum Stratus drives carry a 3 Year Warranty			
Ultra SCSI-3		Quantum Atlas & Viking drives carry a 5 Year Warranty			
	Model	Access	RPM	Internal	External
2.1GB Stratus	QM32160STS	10ms	5400	\$229	\$279
3.2GB Stratus	QM33240STS	10ms	5400	\$259	\$309
4.3GB Stratus	QM34320STS	10ms	5400	\$299	\$349
4.5GB Viking	QM34550VKS	8ms	7200	\$499	\$549
4.5GB Atlas II	QM34550ALS	8ms	7200	\$499	\$549
6.4GB Stratus	QM36480STS	10ms	5400	\$399	\$449
9.1GB Atlas II	QM39100ALS	8ms	7200	\$779	\$829
UltraWide SCSI-3					
4.5GB Viking	QM34550VKS	8ms	7200	\$479	\$559
4.5GB Atlas II	QM34550ALW	8ms	7200	\$519	\$599
9.1GB Atlas II	QM39100ALW	8ms	7200	\$799	\$879
IDE Drives					
1.6GB Stratus	QM31620STA	10ms	4500	\$155	---
2.1GB Stratus	QM32160STA	10ms	4500	\$169	---
3.2GB Stratus	QM33240STA	10ms	4500	\$199	---
4.3GB Stratus	QM33420STA	10ms	4500	\$229	---
6.4GB Stratus	QM36480STA	10ms	4500	\$299	---

 Seagate  									
Seagate drives carry a 5 Year Warranty									
Ultra SCSI-3									
4.5GB Barracuda 4XL	ST34572N	8.5ms	7200	\$579	\$629				
4.5GB Cheetah	ST34501N	8ms	10000	\$679	\$729				
9.1GB Barracuda 9	ST19171N	8ms	7200	\$949	\$999				
9.1GB Cheetah	ST19101N	8ms	10000	\$1099	\$1149				
UltraWide SCSI-3									
4.5GB Barracuda 4XL	ST24572W	8.5ms	7200	\$629	\$709				
4.5GB Cheetah	ST34501W	8ms	10000	\$699	\$779				
9.1GB Barracuda 9	ST19171W	8ms	7200	\$999	\$1079				
9.1GB Cheetah	ST19101W	8ms	10000	\$1149	\$1229				
Fast SCSI-2									
23GB Elite 23	ST423451N	8ms	5400	\$1849	\$1949				
Fast&Wide SCSI-2									
23GB Elite 23	ST423451W	8ms	5400	\$1889	\$1989				
  									
HOT OFFER!!									
2.1GB UltraStar ES	09J1034	8.5ms	5400	\$189	\$239				

THE CLUBMAC PACKAGE

ClubMac drives are preformatted and thoroughly tested. ClubMac drives include a 30-Day Money Back Guarantee, CharisMac Anubis Formatting Utility software, user's guide, brackets (wide drives include internal ribbon cable), 25/50-pin SCSI cable and power cord for external drives (wide drives include 68/68 pin SCSI cable).

TAPE BACK-UP

ClubMac DDS-3 DAT Drive
12-24GB
\$1199



CLUBMAC TAPE BACK-UP

4-8GB DDS-2 Compression DAT Drive \$799
4-8GB DDS-2 Performance DAT Drive \$899
12-24GB DDS-3 Lightning DAT Drive \$1199
15-30GB DLT Drive w/ Retrospect \$2599
20-40GB DLT Drive w/ Retrospect \$2999

ClubMac 8mm AIT Drive
Up to 6MB/Sec!
ONLY \$3099



CLUBMAC AIT DRIVE
25-50GB 8mm AIT Drive \$3099

All ClubMac Tape Back-up Products are bundled with Retrospect 4.0

RETROSPECT 4.0

Retrospect 4.0 Retail Single User \$149
Retrospect 4.0 Remote 10 User License \$175
Retrospect Network Kit 4.0 (w/10 User license) \$275

REMOVABLE

FREE! Get a Second 1.5GB Cartridge

HOT OFFER!! \$299 \$100 OFF



REMOVABLE DRIVES

ClubMac SyQuest 200MB 5.25" \$349
SyQuest EZ Flyer 230MB 3.5" \$149
SyQuest SyJet 1.5GB 3.5" \$299
Nomat 750MB 3.5" \$285

SYQUEST MEDIA

Media	Qty 1	Qty 10	Qty 20
44MB	\$38ea	\$37 ⁵⁰ ea	\$37ea
88MB	\$38ea	\$37 ⁵⁰ ea	\$37ea
200MB	\$59ea	\$58ea	\$57ea
270MB	\$43ea	\$42ea	\$41ea
EZ230MB	\$27ea	\$26 ⁵⁰ ea	\$26ea
1.5GB SyJet	\$79ea	\$75ea	\$72ea

CD READERS & RECORDERS

ClubMac 24X
24X CD-ROM
3600KB/sec data transfer
90ms avg access time
Caddy-less design
ONLY \$169



CLUBMAC CD-ROM READERS

12X 140ms 1800k/sec \$129
24X 90ms 3600k/sec \$169
16X 5 Disc CD Changer \$279

ClubMac 4X/8X
4X/8X CD Recorder
ONLY \$499



CLUBMAC CD-RECORDERS

4X/8X CD-R w/Toast Pro 3.5 \$499
CLUBMAC CD-REWRITABLE
2X/2X/6X CDRW w/Toast Pro 3.5 \$479

THE CLUBMAC PACKAGE: ClubMac CD-ROM & CD Recorders are thoroughly tested. CD-ROM & CD Recorders include a 30-Day Money Back Guarantee, CharisMac CD AutoCache utility software, user's guide, 25/50-pin SCSI cable, terminator, and power cord.

Zip Plus Drive

Includes One Free Cartridge with Zip Tools

100MB ZIP PLUS \$199⁹⁵



IOMEGA ZIP DRIVES

Zip Drive w/one cartridge \$139⁹⁵
Zip Bundle - drive, 11 Disks, Case, 2 Caddy's \$279⁹⁵
Zip Drive Internal - all PowerMacs \$159
Zip Drive Internal - all PowerComp/UMax \$139

Jaz 2GB Drive

2.0GB JAZ \$649⁹⁵



IOMEGA JAZ DRIVES

Jaz 2GB Media \$199⁹⁵
Jaz 2GB Drive Internal - all PowerMacs \$549⁹⁵
Jaz 1GB Drive w/one cartridge \$399⁹⁵
Jaz 1GB Drive Internal - all PowerComp/UMax \$279⁹⁵

IOMEGA JAZ AND ZIP MEDIA

GET MORE STORAGE FOR YOUR STUFF!!!



ZIP MEDIA		Qty 1-2	Qty 3-6	Qty 7-9	Qty 10+
Format	Part#				
MAC	1040 1006	\$19 ⁹⁵	\$16 ⁹⁵	\$14 ⁹⁵	\$12 ⁹⁵
PC	1040 1009	\$19 ⁹⁵	\$16 ⁹⁵	\$14 ⁹⁵	\$12 ⁹⁵

1GB JAZ MEDIA		Qty 1-2	Qty 3-5	Qty 6+
Format	Part#			
MAC	1040 1015	\$124 ⁹⁵	\$99 ⁹⁵	\$89 ⁹⁵
PC	1040 1037	\$124 ⁹⁵	\$99 ⁹⁵	\$89 ⁹⁵

CALL 1-800-260-8549 FOR A FREE CATALOG

WARRANTIES: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer warranty. **MONEY BACK GUARANTEE:** All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. RETURNS: Call for RMA number. Any product that is returned WITHOUT an RMA number will be refused. ALL PRODUCT INFORMATION AND PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS.

THE WORLD!

PRICES SLASHED ON ALL APPLE SYSTEMS!



PRICE SLASHED \$3099
ONLY! \$2896

POWERMAC 8600
• 300MHz 604e PowerPC™
• 24X CD ROM
• 32MB RAM
• 4GB HD
• Zip Drive
• 1 MB L2 Cache

PowerMac 8600 250MHz 604e:
32MB RAM, 4GB HD, 24X CD, Zip... **\$2449***

PowerMac 9600 300MHz 604e:
64MB RAM, 4GB HD, 24X CD, Zip... **\$3597***

PowerMac G3 266MHz G3 Desktop **\$2293***
32MB RAM, 4GB HD, 24X CD

PowerMac G3 266MHz G3 MiniTower **\$2867***
32MB RAM, 4GB HD, 24X CD

*Monitor sold separately.

PRICE SLASHED \$1999
ONLY! \$1890

POWERMAC G3
• 233MHz PowerPC™ G3 Processor
• 133MHz dedicated 64-bit backside bus
• 512K L2 backside cache on processor
• 66MHz system bus
• 32MB RAM • 4MB ROM • 24X CD

Macintosh PowerBook 3400
12.1" Active Matrix Display
200MHz 603e
2GB Hard Drive
6X CD ROM
FAST AS 240MHz

200MHz FOR JUST \$2999

PowerBook 3400 200MHz 603e:
8MB RAM, 2GB HD, 12X CD, 12.1" Active Matrix, 33.6 Modem... **\$3593**

PowerBook 3400 240MHz 603e:
8MB RAM, 3GB HD, 12X CD, 12.1" Active Matrix... **\$4263**

Macintosh PowerBook 1400CS
• 11.3" Dual Scan
• 166MHz 603e
• 1.3GB Hard Drive
• 12X CD ROM

JUST \$2199

PowerBook 1400C 133MHz 603e:
16MB RAM, 1.3GB HD, 8X CD, 11.3" Active Matrix... **\$2568**

PowerBook 1400C 166MHz 603e:
16MB RAM, 2GB HD, 8X CD, 11.3" Active Matrix... **\$2852**

Macintosh PowerBook G3
• 250MHz PowerPC™ G3
• 50MHz System Bus
• 12.1" Active Matrix
• 20X CD ROM
• 32MB EDO RAM
• 5GB IDE Hard Drive

20X CD

PowerBook G3 250MHz
32MB RAM, 5GB HD, 20X CD, 12.1" Active Matrix... **\$5547**

MONITORS

ASTEROPS AC6215
17" Monitor
9" Viewable
8mm

Special Price \$499!

ATI Nexus GA 8MB
ONLY \$529

GRAPHIC CARDS

ATI
Nexus GA™ 8MB 2D & 3D Pro PCI... \$529.00
XClaim VR™ 4MB PCI graphics card... \$244.25
XClaim TV™ Tuner... \$82.00

IX MICRO
Twin Turbo 128M 4MB PCI... \$269
Twin Turbo 128M 8MB PCI... \$429
Pro Rez (4MB Upgradeable) Ultimate Rez (8MB VRAM) Turbo TV... \$94.95

RADIUS
ThunderPower 30/1600 (PCI)... \$549
VideoVision Studio 2.0 (PCI)... \$2499

TECH WORKS
Power 3D (PCI)... \$199

MODEMS

U.S. Robotics
56K Sportster... \$121.95

GLOBAL VILLAGE
Teleport 56K Fax/modem... \$149
Teleport 56K Fax/modem w/2 technology... \$149
Teleport 56K w/Mac OS... \$169

ADDOBE
Illustrator 7.0 Action Pack... \$374.95
Illustrator 7.0 CD upgrade... \$114.95
Photoshop 4.0.1 Action Pack... \$545.95
Photoshop 4.0 upgrade... \$154.95
PageMaker 6.5 Action Pack... \$545.95
PageMaker 6.5 upgrade CD... \$89.95

CLARIS
FileMaker Pro 4.0... \$181.95
FileMaker Pro 4.0 competitive upgrade... \$89.95

MACROMEDIA
FreeHand 7 upgrade... \$138.00
FreeHand 7... \$374.95
Director 6 Multimedia Studio upgrade... \$499.00
Director 6 Multimedia Studio... \$925.00

MICROSOFT
Office Standard 4.2 1 CD or Disk... \$449.95
Office Standard 4.2 1 upgrade CD or Disk... \$265.95

SYMANTEC
Norton Utilities 3.5 Upgrade... \$49.95
SAM 4.5... \$63.95
Suitecase 3.0... \$64.85

SOFTWARE

APPLE
System 8.0 CD upgrade... \$69.99
System 8.0 CD w/AICX... \$99.99
Apple Remote Access MultiPort Server V.2.1... \$699.00

PRINTERS

AMAZING EPSON QUALITY! UNBELIEVABLE PRICES!
AS LOW AS \$269

EPSON
Epson Stylus Color 600 1440 DPI... \$269
Epson Stylus Color 800 1440 DPI... \$399
Epson Stylus Color Photo 6 COLOR... \$399
Epson Stylus Color 3000 17x22 1440 DPI... \$1999

HEWLETT PACKARD
HP LaserJet 6MP... \$885
HP DeskJet 8700CX... \$389

SCANNERS

VISIONEER
PaperPort Vx... \$99

VISIONEER
PaperPort Vx w/FREE SCSI adapter... \$99
PaperPort Strobe... \$249
AGFA
Agfa SnapScan 310 30 bit Scanner... \$199
Agfa Arcus II Desktop Pro Scanner... \$1599

UMAX
UMAX Astra 610S... \$129
UMAX Powerlook II w/trans. adapter... \$1357
*Price After \$20 mail-in rebate

ACCELERATORS

MAXPower PRO
PowerPC 750 Upgrade... \$1049
250MHz FROM JUST \$1049

NEWER TECHNOLOGY
MAXPower Cliton 200 MHz... \$359
MAXPower Cliton 233 MHz... \$449
MAXPower G3 275/183 PPC 750 upgrade... \$1389
MAXPower G3 275/275 PPC 750 upgrade... \$2099
NUPower 183 PPC 183 for 1400 upgrade... \$599

UPGRADE YOUR MEMORY TODAY!
72pin SIMMS
PowerMac G3 DIMMS
4MB \$99 16MB \$149 32MB \$199 64MB \$249 128MB \$299 256MB \$349 512MB \$399 1GB \$449 2GB \$499 4GB \$549 8GB \$599 16GB \$649 32GB \$699 64GB \$749 128GB \$799 256GB \$849 512GB \$899 1GB \$949 2GB \$999 4GB \$1049 8GB \$1099 16GB \$1149 32GB \$1199 64GB \$1249 128GB \$1299 256GB \$1349 512GB \$1399 1GB \$1449 2GB \$1499 4GB \$1549 8GB \$1599 16GB \$1649 32GB \$1699 64GB \$1749 128GB \$1799 256GB \$1849 512GB \$1899 1GB \$1949 2GB \$1999 4GB \$2049 8GB \$2099 16GB \$2149 32GB \$2199 64GB \$2249 128GB \$2299 256GB \$2349 512GB \$2399 1GB \$2449 2GB \$2499 4GB \$2549 8GB \$2599 16GB \$2649 32GB \$2699 64GB \$2749 128GB \$2799 256GB \$2849 512GB \$2899 1GB \$2949 2GB \$2999 4GB \$3049 8GB \$3099 16GB \$3149 32GB \$3199 64GB \$3249 128GB \$3299 256GB \$3349 512GB \$3399 1GB \$3449 2GB \$3499 4GB \$3549 8GB \$3599 16GB \$3649 32GB \$3699 64GB \$3749 128GB \$3799 256GB \$3849 512GB \$3899 1GB \$3949 2GB \$3999 4GB \$4049 8GB \$4099 16GB \$4149 32GB \$4199 64GB \$4249 128GB \$4299 256GB \$4349 512GB \$4399 1GB \$4449 2GB \$4499 4GB \$4549 8GB \$4599 16GB \$4649 32GB \$4699 64GB \$4749 128GB \$4799 256GB \$4849 512GB \$4899 1GB \$4949 2GB \$4999 4GB \$5049 8GB \$5099 16GB \$5149 32GB \$5199 64GB \$5249 128GB \$5299 256GB \$5349 512GB \$5399 1GB \$5449 2GB \$5499 4GB \$5549 8GB \$5599 16GB \$5649 32GB \$5699 64GB \$5749 128GB \$5799 256GB \$5849 512GB \$5899 1GB \$5949 2GB \$5999 4GB \$6049 8GB \$6099 16GB \$6149 32GB \$6199 64GB \$6249 128GB \$6299 256GB \$6349 512GB \$6399 1GB \$6449 2GB \$6499 4GB \$6549 8GB \$6599 16GB \$6649 32GB \$6699 64GB \$6749 128GB \$6799 256GB \$6849 512GB \$6899 1GB \$6949 2GB \$6999 4GB \$7049 8GB \$7099 16GB \$7149 32GB \$7199 64GB \$7249 128GB \$7299 256GB \$7349 512GB \$7399 1GB \$7449 2GB \$7499 4GB \$7549 8GB \$7599 16GB \$7649 32GB \$7699 64GB \$7749 128GB \$7799 256GB \$7849 512GB \$7899 1GB \$7949 2GB \$7999 4GB \$8049 8GB \$8099 16GB \$8149 32GB \$8199 64GB \$8249 128GB \$8299 256GB \$8349 512GB \$8399 1GB \$8449 2GB \$8499 4GB \$8549 8GB \$8599 16GB \$8649 32GB \$8699 64GB \$8749 128GB \$8799 256GB \$8849 512GB \$8899 1GB \$8949 2GB \$8999 4GB \$9049 8GB \$9099 16GB \$9149 32GB \$9199 64GB \$9249 128GB \$9299 256GB \$9349 512GB \$9399 1GB \$9449 2GB \$9499 4GB \$9549 8GB \$9599 16GB \$9649 32GB \$9699 64GB \$9749 128GB \$9799 256GB \$9849 512GB \$9899 1GB \$9949 2GB \$9999 4GB

UMAX
C600x 280MHz 603e, 32MB, 4GB, 12X, Ethernet, 33.6, 1200 Software... **\$1995***
C600lt 240MHz 603e, 24MB, 2.1GB, 8X, 33.6 Modem... **\$1395***
C600v 240MHz 603e, 32MB, 3.3GB, 24X, Virtual PC, Speed Doubler... **\$1495***

SUPERMAC C500LT
• 240MHz 603e • 1.2GB IDE HD
• 16MB RAM • 1MB VRAM
• 8X CD ROM

HOT OFFER!!! 240MHz PowerPC
\$1295

Hours & Customer Service
M-F 9am - 7pm PST (800) 217-9208
Weekends & International Sales (714) 768-8130
F-Sat - 9pm PST (714) 768-8130
Hour Fax (714) 768-9354

Corporate/Educational Sales
M-F 9am - 5pm PST (800) 258-2621
Technical Support (800) 854-6227
M-F 9am - 3pm PST

E-Mail: ClubMac Sales... csmails@club-mac.com
Customer Service... custsvc@club-mac.com
Technical Support... techsup@club-mac.com
Mail: ClubMac... 7 Hammond, Irvine, CA 92618

Circle 96 on reader service card

MACWORLD March 1998 141

MEGAHAUS BEST BUY AWARD WINNER!



• UNBEATABLE DEALS •

• IOMEGA JAZZ DRIVE

Full retail package in Iomega case.
1GB External w/1 disk [JAZX] \$374
1GB Media any qty [JAZC1GIGMAC] \$82
2GB External w/1 disk [JAZ2X] \$639
2GB Media any qty [JAZC2GIGMAC] \$148

• SYQUEST SYJET DRIVE

Drive in our case. Ask about mail-in offer.
External w/1 disk [SYJET1.SMEK] \$345
Media any qty [SJ1.5C] \$84

• PCI WIDE CONTROLLERS

Adaptec Single [A2940MUW] \$269
Dual Channel [A3940MUW] \$529

• 4.6GB OPTICAL DRIVE

Ext w/1 disk [SSS4.6MAC] \$1099

• WIDE SCSI BUNDLE

Name brand 7200rpm Wide SCSI drive,
and an Adaptec Wide SCSI controller.
4GB internal [4GIGCOMBOMI] \$719
4GB external [4GIGCOMBOMX] \$819
9GB internal [9GIGCOMBOMI] \$999
9GB external [9GIGCOMBOMX] \$1099

• QUANTUM IDE DRIVES

3.2GB [FB33240A] \$185
4.3GB [FB34320A] \$233
6.4GB [FB36480A] \$315
8.4GB [FB38400A] \$395

• HITACHI 2.5" IDE DRIVES

2.1GB [DK225A21] \$219
3.2GB [DK226A32] \$339
4.0GB [DK227A41] \$459

We custom configure
to your needs:

RAID

A/V

Call us

Super cooling drive fan. \$30 Alone
or added to an external hard drive.

• CD RECORDERS •

Smart Storage Solutions CDR Drives Include:

✓Toast Mastering Software

✓5 FREE disks

✓Toll Free support

Duo Master

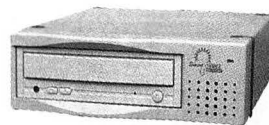
systems include:

1 FREE cartridge!

CDR + Jaz/SyJet

Combo -perfect

for CD recording!



• CD Recordable

2x6 Sony, caddy load, 1MB buffer
2x6 JVC, caddy load, 1MB buffer
4x8 Matsushita, tray load
4x12 Teac, tray load, 1MB buffer
4x12 Plextor, caddy/tray load, 1MB buffer

• CD Rewritable

2x6 Ricoh, tray load, 1MB buffer
2x6 Ricoh, caddy load, 2MB buffer
2x4x6 Yamaha, tray load, 1MB buffer

• External Duo

\$375 \$689
\$375 \$689
\$445 \$759
\$525 \$839
\$579 \$895

\$505 \$819

\$525 \$839

\$615 \$929

• SCSI HARD DRIVES •

Quantum™

2151MB	10ms	5400rpm	128K	FB32160S	3yr	\$219	\$269
2275MB	8ms	7200rpm	512K	VK32275S	5yr	\$329	\$379
3228MB	10ms	5400rpm	128K	FB33240S	3yr	\$258	\$308
4310MB	10ms	5400rpm	128K	FB34320S	3yr	\$307	\$357
4550MB	8ms	7200rpm	512K	VK34550S	5yr	\$429	\$479
4550MB	8ms	7200rpm	512K	XP34550S	5yr	\$499	\$549
6448MB	10ms	5400rpm	128K	FB36480S	3yr	\$385	\$435
8455MB	9.5ms	5400rpm	512K	FB38400S	3yr	\$489	\$539
9100MB	8ms	7200rpm	512K	XP39100S	5yr	\$769	\$809
ULTRA WIDE SCSI							
2275MB	8ms	7200rpm	512K	VK32275W	5yr	\$329	\$419
2275MB	8ms	7200rpm	512K	XP32275W	5yr	\$299	\$389
4550MB	8ms	7200rpm	512K	VK34550W	5yr	\$429	\$519
4550MB	8ms	7200rpm	512K	XP34550W	5yr	\$499	\$589
9100MB	8ms	7200rpm	512K	XP39100W	5yr	\$789	\$869

Seagate

2150MB	11ms	5400rpm	128K	ST52160N	3yr	\$209	\$259
2160MB	8ms	7200rpm	1024K	ST32272N	5yr	\$329	\$379
4550MB	9.1ms	7200rpm	512K	ST34555N	3yr	\$325	\$375
4550MB	8ms	7200rpm	512K	ST34572N	5yr	\$479	\$529
4550MB	7.5ms	10,000rpm	512K	ST34501N	5yr	\$599	\$649
9100MB	8ms	7200rpm	512K	ST19171N	5yr	\$779	\$829
9100MB	8ms	10,000rpm	512K	ST19101N	5yr	\$949	\$999
23200MB	13ms	5400rpm	512K	ST423451N	5yr	\$1669	\$1759
WIDE SCSI							
2160MB	8ms	7200rpm	512K	ST32272W	5yr	\$369	\$459
4550MB	8ms	7200rpm	512K	ST34572W	5yr	\$499	\$589
4550MB	7.5ms	10,000rpm	512K	ST34501W	5yr	\$599	\$689
9100MB	8ms	7200rpm	1024K	ST19171W	5yr	\$799	\$889
9100MB	8ms	10,000rpm	512K	ST19101W	5yr	\$989	\$1079
23200MB	13ms	5400rpm	512K	ST423451W	5yr	\$1689	\$1839

IBM

4550MB	8.5ms	5400rpm	512K	IBM34330N	5yr	\$309	\$359
9100MB	7.5ms	7200rpm	512K	IDCHS391Z	5yr	\$729	\$779
9100MB	6.5ms	7200rpm	1MB	IDGHS09Z	5yr	\$959	\$1009
18200MB	7.5ms	7200rpm	1MB	IDGHS18Z	5yr	\$1759	\$1809
WIDE SCSI							
4550MB	8.5ms	5400rpm	512K	IBM34330W	5yr	\$329	\$429
9100MB	7.5ms	7200rpm	512K	IDCHS391U	5yr	\$749	\$849
9100MB	6.5ms	7200rpm	1MB	IDGHS09U	5yr	\$959	\$1059
9100MB	6.5ms	10020rpm	1MB	IDVGS9U	5yr	\$1019	\$1119
18200MB	7.5ms	7200rpm	1MB	IDGHS18U	5yr	\$1759	\$1859

WESTERN DIGITAL

2100MB	8ms	7200rpm	512K	WD2170N	5yr	\$339	\$389
4300MB	8ms	7200rpm	512K	WD4360N	5yr	\$499	\$549
9100MB	8ms	7200rpm	512K	WD9100N	5yr	\$779	\$829
ULTRA WIDE SCSI							
2100MB	8ms	7200rpm	512K	WD2170N	5yr	\$359	\$449
4300MB	8ms	7200rpm	512K	WD4360N	5yr	\$519	\$609
9100MB	8ms	7200rpm	512K	WD9100N	5yr	\$799	\$889



1-800-786-1184

Sales lines open: M-F 8-8 Sat 9-3 CST

2201 Pine Drive, Dickinson, Texas 77539

(281)534-3919 FAX (281)534-6580

<http://www.megahaus.com>

Prices & specifications subject to change without notice. Shipping charges are nonrefundable. Returns must be in new condition and in original packaging. Defaced items may not be returnable. No refunds on software or special orders (items not listed in ad.) All refunds subject to 15% restocking fee. All trademarks are registered trademarks of their respective companies. Personal checks held for clearance. We reserve the right to refuse any sale for any reason. Bundle price good only if sold at price. All warranties listed are manufacturer's warranty only. ©1997 MegaHaus Inc.

WE WILL TRY TO MATCH OR BEAT ANY ADVERTISED PRICE. CALL FOR LATEST PRICING!!

WE ACCEPT PO'S
FROM QUALIFIED FIRMS

M E M O R Y

SECURITY WILL CALL WINDOW NOW OPEN!
NO SURCHARGE FOR MC, VISA AE & DISCOVER

L.A. Trade has served the PC
market for 10 years...

MACINTOSH MEMORY UPGRADES

Now we bring our expertise
to the Apple Macintosh user.

YOUR MACHINE	STANDARD	MAX	VIDEO UPGRADE	VIDEO COST	256K/ 512K/1MB CACHE	2MB	4MB	6MB	8MB	10MB	12MB	16MB	20MB	24MB	32MB	48MB	64MB	128MB	
Apple PowerBook G3									59			79			139	139	189	239	499
Apple PowerBook 165C, 180C							105	154	189	239									
Apple PowerBook 160, 165, 180							105	154	189	239									
Apple PowerBook 190, 190CS							40		55			85				149			
Apple PowerBook 520, 520c, 540, 540c Notebook	4/8	36/40					40		55		69	79				129			
Apple PowerBook DUO 210, 230, 250 Notebook	4	24					40	55	39	75	79	89	109	28-139					
Apple PowerBook DUO 270c Notebook	4	32					40	55	39	75	79	89	109	28-139					
Apple PowerBook DUO 280, 260c Notebook	4	40					40	55	39	75	79	89	109	28-139	36-279				
Apple PowerBook DUO 2300c/100 Notebook	8/20	56								75	79	89			129	179	269		
Apple PowerBook 1400	12/16	60/64							69			89			119	169	229		
Apple PowerBook 2400	16	80							49			99				169		419	
Apple PowerBook 3400C EDO	16	144							50			89			139	139	189	239	499
Apple PowerBook 5300 Series	8/16/32	56/64					49		54		69	79			149	159	219		
Apple Macintosh IIfx (64 pin)	4	128					119					179						469	
Apple Macintosh IIfx	2/3/5	17					28					88							
Apple Macintosh IIfx & IIfx	4	68	512k	59			28					88						469	
Apple Macintosh Classic II, LC, LCII	2/4	10	512k	59		16			44										
Apple Macintosh LCIII, LC475, LC550, LC575, LC580	4	36	256k	34								59				119			
Apple Macintosh LC520	5	36					20		39			59				119			
Apple Macintosh LC580	4	48					20		39			59				119			
Apple Macintosh LC499	4	36					20		39			59				119			
Apple Macintosh LC5200	8	64					20		39			59				119			
Apple Macintosh LC630	5	36					20		39			59				119			
Apple Macintosh IIfx	1/5	128					40					119				208		469	
Apple Macintosh II, IIfx, IIfx (w/Pal)	1	32					48		109			149				298			
Apple Macintosh SE30	1/2	32					40		96			119				238			
Apple Performa 400	4	10	512k	68		22	30		56										
Apple Performa 405, 410, 430	4	10	512k	68		22	30		56										
Apple Performa 450, 460, 466, 467, 475, 476	4	36	256k/512k	34/68			20		39			99				109			
Apple Performa 550, 560, 575, 577, 578, 580	5	36	256k	34			20		39			99				109			
Apple Performa 600, 600CD	5	68	512k	59			40					119						469	
Apple Performa 6110CD, 6112CD, 6115CD (pairs)	8/16	72					20		39			59				109			
Apple Performa 6117CD, 6118CD (pairs)	8/16	72					20		39			59				109			
Apple Performa 630, 630CD, 636	4	36					20		39			59				109			
Apple Performa 631CD, 636CD, 640CD	8	52					20		39			59				109			
Apple Performa 635CD	5	36					20		39			59				109			
Apple Performa 637CD, 638CD	8	36					20		39			59				109			
Apple Performa 5200 Series 5200CD, 5215CD, 5300	8/16	64					20		39			59				109			
Apple Performa 6100 Series 6116CD (pairs)	8/16	72					20		39			59				109			
Apple Performa 6200 Series 6200CD, 6216CD, 6218CD	8	64					20		39			59				109			
Apple Performa 6200 Series 6220CD, 6230CD, 6290	8	64					20		39			59				109			
Apple Performa 6205CD, 6214CD	8	64					20		39			59				109			
Apple Performa 6300CD, 6320	16	64					20		39			59				109			
Apple Performa 6400CD, 6360 (2K Refresh)	16	136			94							59				99		189	
Apple Centris 610, 650, 660 AV	4	132	512k	59			20		39			59				109			
Apple Quadra 605	4	36	512k	59			20		39			59				109			
Apple Quadra 610	4	68	256k	34			20		39			59				109			
Apple Quadra 630	4	36					20		39			59				109			
Apple Quadra 650	4/8	132/136	256k	34			20		39			59				109			
Apple Quadra 660AV	4	68					20		39			59				109			
Apple Quadra 700	4	68	256k	34			48					104						469	
Apple Quadra 800 (pairs)	8	136	512k	59			20		39			59				109			
Apple Quadra 840AV	8	128	512k	59			20		39			59				109			
Apple Quadra 900	4	256	512k	59			48					104						469	
Apple Quadra 950	8	256	512k	59			48					104						469	
Power Macintosh G3			2/4/6M	39/69/Call					49			69			99		319	719	
Power Macintosh 4400/160	8	72	2M/4M	59/79	89/119/-							53			99		189		
Power Macintosh 5200, 5260, 5300	16	136			89/119/-		20		39			59			99				
Power Macintosh 5400	8	136			89/119/-							53			99		189		
Power Macintosh 6100/60, 6100/66, 6100/66AV (pairs)	8/16	72			29/-/-		20		39			59			109				
Power Macintosh 6200/75	8/16	72			29/-		20		39			59			109				
Power Macintosh 6400/200	8/16	72			89/119/-		20		39			53			99		189		
Power Macintosh 6500/225, /250, /275, /300 (Edo)	8/16	72			29/-		20		39			53			99		189		
Power Macintosh 7100/66, 7100/80, 7100/66AV (pairs)	8/16	136	512k	59	29/-/-		20		39			59			109				
Power Macintosh 7200/75, /90, /120, /120PC	8/16	256	1mg	49	49/74/169							53			99		189		
Power Macintosh 7300/166, /180, /200, 7500/100	8/16	256/1gig	1mg	49	49/74/169							53			99		189		
Power Macintosh 7600/100, /120, /132, /200	8/16	1gig/512	1mg	49	49/74/169							53			99		189		
Power Macintosh 8100/80, /100, /110	8/16	264	512k	59	29/109		20		39			59			109				
Power Macintosh 8100/80AV, /100AV, /110AV (pairs)	8/16	264	512k	59	29/109		20		39			59			109				
Power Macintosh 8500/120, /132, /150, /180	8/16	1gig/512	1mg	29	49/74/169							53			99		189		
Power Macintosh 8600/200, /233	8/16	1gig/512	1mg	49	49/74/169							53			99		189		
Power Macintosh 9500/120, /132, /150, /180MP, 200	16/32	768/1.5 gig	2mg	62								53			99		189		
Power Macintosh 9600/200, /233, /200MP	8/16	768	2mg	87								53			99		189		
Color Laserwriter 12/600 PS	12	40					16					49							
Color Laserwriter 12/640 PS	4	64					16		29			49			89				
Color Laserwriter 16/600 PS	8	32					16		29			49							
Motorola Starmax 3000 EDO/160, 200; 4000/160, 200	16/32											74			119		209		

ORDER ON LINE &
RECEIVE A FREE GIFT!
Orders of \$100 or more
receive a gift worth \$19.95
Orders of \$500 receive a
gift worth \$39.00
www.4LTrade.com

NEW
168 Pin EDO
3.3V Dimms
Call!

CALL FOR NEW MODELS NOT LISTED

All products brand new & guaranteed • We buy excess inventory
Trademarks are registered with their respective companies.



22825 Lockness Avenue • Torrance, CA 90501
CUSTOMER SERVICE & TECHNICAL: OPEN M-F, 9-4 PST

POWER COMPUTING

	8MEG	16 MEG	32MEG	64MEG
POWER 80, 100, 110, 120	37.00	55.00	99.00	189.00
POWER CENTER 120, 132, 150, 166, 180	37.00	55.00	99.00	189.00
POWER CURVE 60/120	37.00	55.00	99.00	189.00
POWER TOWER 166/180	37.00	55.00	99.00	189.00
POWER TOWER PRO 180, 200, 225	37.00	55.00	99.00	189.00
POWER WAVE 604/120	37.00	55.00	99.00	189.00
POWER WAVE 604/132, 150	37.00	55.00	99.00	189.00
POWER COMPUTING POWER BASE (EDO)	44.00	74.00	119.00	209.00

NO SURCHARGE FOR MASTERCARD, AMEX, VISA OR DISCOVER. PURCHASE ORDERS ACCEPTED FROM JUNE 2000. GOVERNMENT & INSTITUTIONS: California orders add 8.25% sales tax. Returned orders or ordered wrong parts are subject to a 20% restocking fee. We accept international orders shipped via UPS Air, APO, FPO orders welcome. Customers are expected to pay customs and "other" charges if shipped INTL. All credit card charges verified by fraudulent use. 30 DAY, NO REFUND AFTER 30 DAYS - EXCHANGES ONLY. If you receive defective merchandise we exchange only - no refunds. We accept MC, VISA, Discover, A/C, prepaid orders, purchase orders, wire transfer. 2000 (cashiers checks, orders, cash & cashiers checks. Orders shipped by UPS. FEDEX must be signed for. *ALL MANUFACTURER PART #12 ARE FOR REF. ONLY - MINIMUM ORDER \$40.00 - NO REFUNDS ON SHIPPING.

UMAX MEMORY

C500/140, 160, 180	8/16/32/64 meg	37/53/99/189
C600/180, 200, 240	8/16/32/64 meg	37/53/99/189
J700/150, 180	8/16/32/64	37/53/99/189
S800/150, 180, 200, 225 (pairs)	8/16/32/64/128 meg	37/53/99/189/569
S900 dp/180, 200 (pairs)	8/16/32/64/128 meg	37/53/99/189/569

HOT BOX SPECIALS - LIMITED QUANTITIES

Apple Powerbook Duo	8Meg	21.00
Apple Powerbook 520, 540	4Meg	9.00
Apple Powerbook 520, 540	8Meg	19.00
Apple Powerbook 5300	8/12/16Meg	29/39/59
Apple Powerbook Duo 230	15Meg	69.00
Apple Powerbook Duo 230	14Meg	49.00



**COMPUTER
DISCOUNT
WAREHOUSE**

**The right price.
The right advice.**

We're more

“Call CDW®

today and get some
honest, friendly,
professional
advice that will
save you more
than money.”



ViewSonic®

**Optiquest V95
19" color monitor**

- 19" flat square screen, 18" viewable image size
- 0.26mm dot pitch
- Maximum resolution: 1600 x 1280 at 76Hz
- 3-year limited warranty on CRT and parts, 1-year labor warranty

\$829.52 CDW 91073



**hp HEWLETT®
PACKARD**

**The new standard for
workgroup printing**

**HP LaserJet
4000se printer**

- Resolution: up to 1200 dpi with HP ProRes
- Print speed: up to 17 ppm
- Includes HP LaserJet Publishing Internet Kit
- HP C3094A



\$1149.00 CDW 97680

HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT PRICES!

COMPUTERS

Apple® Power Macintosh® Series	
6500 250MHz PowerPC	
32MB 4GB 24X CD.....	1999.00
6500 275MHz PowerPC 603e	
32MB 4GB 12X CD.....	2499.00
6500 275MHz PowerPC	
32MB 6GB 24X CD Iomega Zip drive.....	2499.00
6500 275MHz PowerPC	
48MB 6GB 24X CD Iomega Zip drive.....	2799.00
6500 300MHz PowerPC 603e	
64MB 4GB 12X CD.....	2499.00
6500 300MHz PowerPC 64MB 6GB 24X CD Iomega Zip drive.....	2999.00
7300 200MHz PowerPC 604e 32MB	
2GB 12X CD.....	2199.00
7300 PC compatible 180MHz PowerPC	
604e/166MHz Intel Pentium processor.....	3199.00
Application Server Solution 180MHz PowerPC	
604e 48MB 4GB 12X CD.....	2499.25
Internet Server Solution 180MHz PowerPC	
604e 48MB 4GB 12X CD.....	3079.35
AppleShare Server Solution 180MHz PowerPC	
604e 48MB 4GB 12X CD.....	3266.34
8600 250MHz PowerPC 604e 32MB	
4GB 24X CD Zip drive.....	2599.00
8600 300MHz PowerPC 604e 32MB	
4GB 24X CD Zip drive.....	3099.00
9600 300MHz PowerPC 604e 64MB	
4GB 24X CD Iomega Zip drive.....	3799.00
9650 Application Server Solution 350MHz	
PowerPC 604e 64MB 24X 24X CD.....	6389.99
9650 Internet Server Solution 350MHz	
PowerPC 604e 64MB 24X 24X CD.....	6885.67
9650 AppleShare Server Solution 350MHz	
PowerPC 604e 64MB 24X 24X CD.....	6999.70
Apple® Macintosh® PowerBook® Series	
1400c 133MHz PowerPC 603e 16MB	
1.3GB 11.3" active 8X CD.....	2699.00
1400c 166MHz PowerPC 603e 16MB	
2GB 11.3" active 8X CD.....	2999.00
2400c 180MHz PowerPC 603e 16MB	
1.3GB 10.4" active.....	2999.00
3400c 180MHz PowerPC 603e 16MB	
1.3GB 12.1" active 12X CD.....	3199.00
3400c 200MHz PowerPC 603e 16MB	
2GB 12.1" active 12X CD.....	3799.00
3400c 240MHz PowerPC 603e 16MB	
3GB 12.1" active 12X CD.....	4499.00

UMAX

SuperMac Series Desktops	
C500LT 200MHz PowerPC 603e	
16MB 2GB 8X CD.....	995.00
C500e 200MHz PowerPC 603e	
16MB 2GB 12X CD 10BT.....	1095.00
C500 200MHz PowerPC 603e	
16MB 2GB 12X CD.....	1095.00
J700 180MHz PowerPC 604e	
24MB 2.1GB 8X CD.....	1795.00
SuperMac Series Mini-towers	
C600 200MHz PowerPC 603e	
16MB 2.1GB 8X CD.....	1195.00
C600LT 240MHz PowerPC 603e	
24MB 2GB 12X CD.....	1395.00
C600x 240MHz PowerPC 603e	
32MB 3GB 12X CD 10BT.....	1795.00
C600x 280MHz PowerPC 603e	
32MB 4GB 12X CD 10BT.....	1995.00
SuperMac Series Mini-towers	
S900 200MHz PowerPC 604e	
32MB 2.1GB 8X CD 10BT.....	2495.00
S900 233MHz PowerPC 604e	
32MB 2.1GB 8X CD 10BT.....	2895.00
S900L 250MHz PowerPC 604e	
2MB 2.1GB 8X E100.....	3495.00
S900DP 2x250MHz PowerPC	
604e 64MB 4GB 12X E100.....	6995.00

HANDHELD COMPUTERS

eMate 300.....	799.00
MessagePad 2000.....	775.89
MessagePad 2000 w/keyboard & case.....	859.62

MONITORS

MultipleScan 15AV 15" 0.28mm.....	389.86
MultipleScan 720 17" 0.28mm.....	549.00
AppleVision 750 17" 0.25mm.....	849.00
AppleVision 850 20" 0.26mm.....	1849.00
AppleVision 850AV 20" 0.26mm.....	1999.00

MAG

DJ530 15" 0.28mm.....	289.73
DJ702E 17" 0.28mm.....	499.23
DJ920 21" 0.28mm.....	1389.54

PHILIPS MAGNAVOX

MB5314 15" 0.28mm.....	329.31
MB7000 17" 0.28mm.....	459.54

NEC

A500 15" 0.28mm.....	319.01
E500 15" 0.25mm.....	376.04
A700 17" 0.28mm.....	567.43
E700 17" 0.25mm.....	659.18
P750 17" 0.25mm.....	785.91
E1100 21" 0.28mm.....	1218.46
P1150 21" 0.28mm.....	1349.21

SONY

100sf 15" 0.25mm.....	376.97
100es 15" 0.25mm.....	339.30
200sf 17" 0.25mm.....	649.36
20sf2 20" 0.30mm.....	984.31

ViewSonic®

E641 14" 0.28mm.....	189.34
E655 15" 0.28mm.....	279.02
G653 15" 0.28mm.....	296.02
E771 17" 0.27mm.....	479.46
E771 17" 0.27mm black.....	535.87
G773 17" 0.26mm.....	545.67
17GA 17" 0.27mm.....	567.43
G1775 17" 0.25mm.....	619.17
PT775 17" 0.25mm.....	696.75
G790 19" 0.26mm.....	865.87
G800 20" 0.28mm.....	994.80
G810 21" 0.25mm.....	1199.98
P810 21" 0.25mm.....	1285.48
PT813 21" 0.28mm.....	1358.00
PT815 21" 0.25mm.....	1429.71

VIDEO BOARDS

Nexus GA 8MB PCI.....	496.20
Xclaim TV external TV tuner.....	79.79
Xclaim 3D 4MB PCI.....	177.03
Xclaim 3D 8MB PCI.....	229.32
Xclaim VR 2MB PCI.....	169.38

Turbo TV video capture.....	98.19
Twin Turbo 128M2 2MB PCI.....	215.64
Twin Turbo 128M4 4MB PCI.....	309.96
Twin Turbo 128M8 8MB PCI.....	539.68

COMMUNICATIONS

Megahertz 33.6 Ethernet 10BT	
PC Card w/RJ11.....	299.16
Sportster Voice 33.6 external.....	76.62
Sportster 33.6 external.....	139.07
Sportster 56K x2 fax/modem external.....	217.99
Courier I-modem.....	339.78

COMMUNICATIONS

TelePort 56K x2 external.....	149.46
TelePort 56K 56Flex external.....	149.60
56K bps fax/modem PC Card.....	249.34
56K bps fax/modem/Ethernet PC Card.....	349.14

HAYES

ACCURA 336 external.....	137.56
ACCURA 56K external.....	176.51

DATA STORAGE

Hi-Vai SounTastic 12X CD external.....	147.88
Hi-Vai SounTastic 12X CD Kit w/software.....	169.80
Hi-Vai SounTastic 16X CD external.....	154.76
Hi-Vai SounTastic 16X CD Kit w/software.....	219.29
Hi-Vai SounTastic 2X6	
CD-Recording system external.....	394.11

ioeoma

Zip drive 100MB SCSI internal.....	139.99
100MB Zip disk.....	19.95
100MB Zip disk 3-pack.....	49.95
Jaz Drive 1GB SCSI-2 external.....	399.95
1GB Jaz disk.....	124.95
1GB Jaz disk 3-pack.....	299.95
Jaz Jet PCI SCSI interface for Power Mac.....	99.95

2.1GB Quantum ST Ultra SCSI-3 internal.....	279.00
3.2GB Quantum ST Ultra SCSI-3 internal.....	349.00
4.3GB Quantum ST Ultra SCSI-3 internal.....	429.00
6.4GB Quantum ST Ultra SCSI-3 internal.....	569.00
9.1GB Quantum Ultra SCSI-3 internal.....	1139.00
2GB Apple drive Ultra SCSI-3 external.....	469.00
3GB Apple drive Ultra SCSI-3 external.....	539.00
4GB Apple drive Ultra SCSI-3 external.....	589.00

Quantum

1.6GB Fireball ST Ultra-ATA.....	159.97
2.1GB Fireball ST Ultra-ATA.....	198.87
2.1GB Fireball ST Ultra-SCSI.....	239.15
3.2GB Fireball ST Ultra-ATA.....	219.24
3.2GB Fireball ST Ultra-SCSI.....	308.87
4.3GB Fireball ST Ultra-ATA.....	279.32
4.3GB Fireball ST Ultra-SCSI.....	345.45
6.4GB Fireball ST Ultra-ATA.....	367.87
6.4GB Fireball ST Ultra-SCSI.....	457.12

SyQuest

EZFlyer 230MB external.....	148.99
EZFlyer 230MB cartridge.....	24.99
SyJet 1.5GB SCSI internal.....	299.99
SyJet 1.5GB SCSI external.....	299.99
SyJet 1.5GB cartridge.....	79.99

INPUT DEVICES

AGFA	
ePhoto 307 digital camera.....	289.53
SnapScan 600 flatbed scanner.....	389.05
StudioStar flatbed scanner.....	616.80
Arcus II flatbed scanner.....	1319.72

ALPS

Portable GlidePoint.....	43.38
Desktop GlidePoint.....	69.84
GlidePoint Keyboard.....	109.61
GlidePoint Keypad.....	115.18

ADESSO

PowerMouse.....	19.52
Soft Touch Plus extended keyboard.....	49.45
NU-Form extended keyboard.....	49.23
NU-Form extended keyboard w/touchpad.....	77.45
Tru-Form extended keyboard w/pointer.....	59.89
Tru-Form extended keyboard.....	68.11
Tru-Form Touch Pad.....	89.74

INPUT DEVICES

EPSON®

PhotoPC 500 digital camera.....	399.00
PhotoPC 600 XGA digital camera.....	799.00
Action Scanning System II.....	279.88
Expression 636 Executive scanner.....	799.00
Expression 636 Artist scanner.....	999.00
Expression 636 Professional scanner.....	1399.00

**HEWLETT®
PACKARD**

HP ScanJet 6100cse flatbed scanner.....	799.00
---	--------

Kodak

DC20 digital camera.....	179.48
DC25 digital camera.....	237.28
DC50 digital camera w/Zoom lens.....	499.00
DC120 digital camera w/Zoom lens.....	799.00
DC210 digital camera.....	899.00

MICROTEK

Color PageWiz personal scanner.....	155.05
ScanMaker V300 scanner.....	139.41
ScanMaker E3 scanner.....	145.34
ScanMaker E6 Standard scanner.....	284.34
ScanMaker E6 Professional scanner.....	524.91

Nikon

Coolpix 300 digital camera.....	674.04
AX-210 ScanTouch flatbed scanner.....	569.78
LS-20 Super CoolScan II.....	909.09
Super CoolScan film scanner.....	1774.49

Polaroid

PDC 2000/40 digital camera.....	1445.40
SprintScan 35LE film scanner.....	796.54
SprintScan 35ES film scanner.....	1459.09
SprintScan 35+ film scanner.....	1836.02

UMAX

Astra 600S flatbed scanner.....	149.00
Astra 1200S flatbed scanner w/film.....	
Adobe PhotoDeluxe.....	249.00
Astra 1200S flatbed scanner w/film.....	
Adobe Photoshop.....	499.00
PowerLook II.....	1339.43

VISIONEER

PaperPort vx scanner.....	149.95
---------------------------	--------

PRINTERS

LaserWriter 4/600 PS	
LaserWriter 4/600 PS.....	819.71
LaserWriter 16/600 PS.....	1549.07
LaserWriter 16/600 PS.....	1818.47
LaserWriter 8500.....	2399.29
Color LaserWriter 12/660 PS.....	4329.50
Color StyleWriter 4100.....	234.79
Color StyleWriter 4500.....	329.18
Color StyleWriter 6500.....	459.86

EPSON®

Stylus Color 600.....	269.00
Stylus Color 800.....	399.00
Stylus Color 1520.....	799.00
Stylus Color 3000.....	1999.00
Stylus Photo.....	499.00

**hp HEWLETT®
PACKARD**

HP DeskJet 340 portable ink jet printer.....	295.01
HP DeskJet 870Cxi printer.....	375.30
HP DeskJet 1600CM printer.....	169.33
HP LaserJet 6MP printer.....	879.85
HP LaserJet 5M printer.....	1617.24
HP LaserJet 5si MX printer.....	3556.38

800-509-4239

www.cdw.com

©1998 CDW Corporation. All rights reserved. CDW, the CDW logo, and the CDW logo are trademarks of CDW Corporation. All other trademarks are the property of their respective owners.

**Visit CDW® on the Internet for information
on more than 12,000 products**

COMPUTER DISCOUNT WAREHOUSE™

than just a great price... We're great service too!



Jaz 2GB

2GB removable disk drive

- Ultra SCSI interface ■ 8.7MB per second maximum sustained transfer rate
- Average access time: 16.5ms ■ 512KB cache
- Includes a full software suite to make managing your stuff easier



Media sold separately

\$649.95 CDW 97935

Apple® Power Macintosh® G3 Series

- 233MHz or 266MHz PowerPC™ G3 processor
- 66MHz system bus speed
- 32MB RAM standard
- 4GB or 6GB IDE hard drive
- 24X Max CD-ROM drive
- Iomega Zip drive (on select models)



Monitor sold separately

As low as!

\$1999.00 CDW 99851



Apple® Macintosh® PowerBook® G3

- 250MHz PowerPC G3 processor
- 32MB EDO RAM standard, expandable to 160MB
- 5GB hard drive
- 12.1" active-matrix color SVGA display
- 20X CD-ROM drive



\$5699.00 CDW 99854

CDW® CARRIES MORE THAN 30,000 PRODUCTS! IF YOU DON'T SEE IT, CALL!

SOFTWARE

Acrobat V3.0.1 CD	179.64
After Effects V3.1 CD	609.05
Illustrator V7.0 CD	368.77
Illustrator V6.0 version upg CD	115.73
PageMaker V6.5 CD	549.20
PageMaker V6.5 competitive upg CD	178.17
PageMaker V6.5 version upg CD	89.87
Persuasion V4.0 CD	239.90
Persuasion V4.0 upg CD	115.72
PhotoDeluxe CD	49.47
Photoshop V4.0 CD	549.29
Photoshop V4.0 version upg CD	159.58
Premiere V4.2 CD	489.22
Premiere V4.2 upg CD	129.65
Type Manager Deluxe V4.0 CD	62.37
Type Reunion Deluxe V2.0	38.72



Apple At Ease V3.0	29.25
Apple Mac OS 7.6 w/Internet Connection Kit CD	94.76
Apple Remote Access V3.0 client	51.78
Apple Remote Access V3.0 server	109.13
Mac OS 8 CD	94.47
Mac OS 8 upg CD	66.96



OmniForm V2.0	129.33
OmniPage Direct V2.0	57.64
OmniPage Pro V7.0 CD	475.36
OmniPage Pro V7.0 upg CD	115.10

FileMaker Pro V4.0

Upgrade CD **\$88.52** CDW 96405

CD **\$179.41** CDW 96404



Conflict Catcher V4.0	59.01
-----------------------	-------



ClarisDraw V1.0	179.75
ClarisImpact V2.0	79.00
ClarisWorks V5.0 CD	89.58
Emailer V2.0	42.17
FileMaker Pro V3.0 server	899.65
FileMaker Pro V3.0 server upg	276.60
Home Page V2.0 CD	86.99
Organizer V2.0	63.20



RAM Doubler 2	53.74
Speed Doubler 2	53.91
Speed Doubler 8	54.20
VideoPhone V2.0 (software only)	54.09
Virtual PC w/PC DOS CD	64.90
Virtual PC w/Win 95 CD	134.76
Virtual PC w/Win 95 CD	132.76



Corel Gallery V1.0 CD	19.80
Corel Gallery V2.0 CD	34.96
Corel Mega Gallery CD	44.91
Corel Print House CD	28.88
Corel Stock Photo Library 1 CD	865.75

SOFTWARE



Corel Stock Photo Library 2 CD	869.80
Corel Stock Photo Library 3 CD	886.75
Corel Super Ten Select Photos CD	35.88
Corel WEB.GALLERY CD	61.81
Corel WordPerfect V3.5 CD	155.92
Corel WordPerfect V3.5 upg CD	79.82
CorelDRAW 6 Suite CD	369.01
CorelDRAW 6 Suite upg CD	135.23



Phone Search USA V3.0	26.60
Street Atlas USA V4.0	38.91
Street Atlas USA V4.0 and Phone Search USA	
V3.0 value pack	52.88
Tripmate	144.60

DENEBA

Canvas V5.0 3.5 + CD	385.29
Canvas V5.0 competitive upg	138.26
Ultra Paint Home V1.0	16.25

EQUILIBRIUM

DeBabelizer Lite V1.1	64.00
DeBabelizer Toolbox V1.6	229.54
DeBabelizer Toolbox V1.6 5-user	929.50



Cyberpress V1.0	129.21
Intelligence V3.0 CD	89.78
MaskPro V1.0 CD	269.45
Page Tools V2.0	69.70
PhotoTools V2.0 CD	116.62
Portfolio V3.0 CD	89.27
Pretlight Pro	89.78
QuarkXPress Power Trio	179.54
QX Effects	116.62
QX-Tools V2.0 CD	89.33
VectorTools V2.0 CD	89.64



QuarkXPress V4.0

\$715.91

CDW 99410



CD-ROM Toolkit V2.0	48.24
Hard Disk Toolkit V2.01	48.66

GRAPHISOFT

Blueprint V5.0	189.53
MiniCAD V7.0	514.41



SoftWindows 95 V4.0 CD	174.59
SoftWindows for Performa	115.50
SoftWindows V3.0 CD	128.28

SOFTWARE



QuickBooks Pro V4.0	179.58
QuickBooks V4.0	109.63
QuickBooks Basic 98	41.93
QuickBooks Deluxe 98 CD	58.73



Authorware 4 CD	2048.29
Authorware 4 Interactive Studio CD	3065.72
Director 6 upg CD	385.35
Director Multimedia Studio 6 CD	929.66
Director Multimedia Studio 6 upg CD	479.57
Flash 2 CD	239.39
FreeHand 7 CD	379.42
FreeHand 7 competitive upg CD	138.04
FreeHand 7 upg CD	138.11
FreeHand Graphics Studio 7 CD	459.08
FreeHand Graphics Studio 7 competitive upg CD	199.45
FreeHand Graphics Studio 7 upg CD	184.95
SoundEdit 16 V2.0 CD	219.68
SoundEdit 16 V2.0 plus DECK II CD	339.58

Speed Doubler 8

\$54.20

CDW 95799



Art Dabbler	42.18
Bryce 2 Accessory Kit CD	47.95
Bryce 2 CD	156.99
Detailer CD	276.10
Expression CD	127.27
Infiniti-D V4.0 CD	497.24
Kai's Photo Soap CD	41.91
Kai's Power Geo CD	49.95
Kai's Power Tools 3 CD	109.79
KPT Actions Accessory Kit CD	42.18
Painter V5.0 CD	259.16
Painter V5.0 upg CD	86.57
Poser V2.0 CD	119.79
Poser V2.0 upg CD	62.22
Ray Dream Studio V5.0 CD	259.08
Ray Dream Studio V5.0 upg CD	89.08



CodeWarrior Discover Programming	62.90
CodeWarrior for PalmPilot	298.53
CodeWarrior Latitude	318.65
CodeWarrior Professional CD	479.83
CodeWarrior Professional upg CD	359.78

Microsoft

Bookshelf 98 CD	43.73
Cinemania 97 CD	29.03
Encarta Deluxe 97 CD	67.18
Excel V5.0	298.83
Excel V5.0 upg	115.37
Flight Simulator V4.0	39.94
FrontPage V1.0 CD	134.24
Office V4.2.1 Small Business CD	449.76
Office V4.2.1 Small Business upg CD	269.84
PowerPoint V4.0 upg	115.72
Project V4.0	424.45

Microsoft

Project V4.0 upg	134.89
Visual FoxPro V3.0 CD	445.46
Visual FoxPro V3.0 upg CD	267.42
Word V6.0.1	298.83
Word V6.0.1 version upg	115.71
Works V4.0	43.92



Select Phone Deluxe 97 CD	62.41
---------------------------	-------



Norton Utilities V3.5

\$92.93 CDW 88335



Quarkmedia V1.0 CD	669.96
--------------------	--------

Studio Pro V1.75	856.86
Vision 3D V4.0	58.67



ACT! V1.0 for Newton	87.81
ACT! V2.5 upg	46.18
ACT! V2.8	147.63
Norton Diskless V4.0	71.85
Norton Utilities V3.5 CD	92.93
SAM AntiVirus V4.5	53.87
Suitcase V3.0	63.87

CDW® DIRECTORY

PC sales	800-650-4239
Mac sales	800-509-4239
Corporate sales	800-280-4239
Corporate software sales	800-294-4239
Government and Education sales	800-615-4239
Networking sales	800-661-4239

CDW® TELEPHONE HOURS

Sales	
Monday-Friday 7 a.m.-9 p.m. CT	
Saturday 9 a.m.-5 p.m. CT	
Tech Support for Customers	
Monday-Friday 7 a.m.-9 p.m. CT	
Saturday 9 a.m.-5 p.m. CT	

BUY WITH CONFIDENCE

CDW® IS A NASDAQ TRADED COMPANY

TICKER SYMBOL CDWC D & B rated S&P Duns 10-762-7952



Credit card charges are not submitted until time of shipment. For your protection, we ship only to your credit card's verified billing address. Freight is calculated as the carrier's actual freight charge plus insurance and packaging material. The cost of insurance is 0.35% (0.0035) of the order total. Packaging materials will not exceed \$4.00 for single package shipments or \$6.00 for multi-package shipments. Before returning any product, you must obtain an RMA number. Non-defective returns are subject to a restocking fee. Software, chips and other electronic components are not returnable. Allow 10 business days for shipping when paying by personal check. All pricing subject to change. For all prices, products and offers, CDW reserves the right to make adjustments due to changing market conditions, product discontinuation, manufacturer price changes, errors in advertisements or other extenuating circumstances. All trademarks and registered trademarks are the sole property of their respective owners.

800-509-4239

www.cdw.com

©1998 CDW Computer Centers, Inc. All rights reserved. Microsoft, IBM, Intel, and Apple are trademarks of their respective owners. Version 04/98

CDW® is an Apple Authorized Catalog Reseller - call us for all of your Apple needs!

COMPUTER DISCOUNT WAREHOUSE™



Digital
Graphix
NOW
LEASING

SupraExpress
\$200 56K MODEM
FREE!

LEASE FROM Digital Graphix

\$0 Down 100% Business Financing
NO Payments for 90days!

Up to
\$100,000
Lease Credit

New Business? Yes
Need Money? Yes
Call? Digital Graphix



9600/350
DTP Hi-End SOLUTION

19600/350 starting at \$4699!

PowerPC 9600/350 w/ 24xCD
320MB RAM, 4GB HD, 1MB Cache
Internal Zip, Apple keyboard
Viewsonic 21" P810 monitor
IMS 8MB PCI video card
Microtek ScanMaker III/Trans/Photoshop
GCC 808 800dpi 11x17 Printer & Enet
SyJet 1.5GB Drive with 1 cartridge
Wacom 12x12 Graphics Tablet
Sony SDT-5000 DAT Tape Backup

Lease Package
Only \$11944*

G3-266D starting at \$1899!

Go Custom

PowerPC G3 266 DT w/ 24xCD
96MB RAM, 4GB HD
Apple keyboard
IOMega Zip 100 w/ 1 cart
Viewsonic EA 771 17" AV monitor
Scanmaker V310 color scanner
6MB Video RAM
Epson Stylus Color 800 1440dpi Inkjet printer
Wacom 6x8 Artz Graphics Tablet

Lease Package
Only \$3438

PM G3-266D
VALUE DTP STATION

PowerPC G3 266 DT w/ 24xCD
96MB RAM, 4GB HD
Apple keyboard
IOMega Zip 100 w/ 1 cart
Viewsonic EA 771 17" AV monitor
Scanmaker V310 color scanner
6MB Video RAM
Epson Stylus Color 800 1440dpi Inkjet printer
Wacom 6x8 Artz Graphics Tablet

Lease Package
Only \$3438

8600/300 starting at \$2299!

PowerPC 8600/300 w/ 24xCD
160MB RAM, 4GB HD, 1MB Cache
Apple keyboard
Int IOMega Zip 100 w/ 1 cart
Viewsonic EA 771 17" AV monitor
Scanmaker V310 color scanner
ATI 4MB PCI 3-D video card
GCC608 11x17, 600 dpi printer w/ Ethernet connectors
Wacom 12x12 Graphics Tablet

Lease Package
Only \$5712*

8600/300
MIDRANGE DTP STATION

PowerPC 8600/300 w/ 24xCD
160MB RAM, 4GB HD, 1MB Cache
Apple keyboard
Int IOMega Zip 100 w/ 1 cart
Viewsonic EA 771 17" AV monitor
Scanmaker V310 color scanner
ATI 4MB PCI 3-D video card
GCC608 11x17, 600 dpi printer w/ Ethernet connectors
Wacom 12x12 Graphics Tablet

Lease Package
Only \$5712*

9600/300 starting at \$2699!

60 Frames/Sec

PowerPC 9600/300MHz w/ 24xCD
448MB RAM, 4GB HD
1MB Cache
Extended keyboard
Internal Zip 100 w/ 1 cart
Viewsonic GT800 20" monitor
IMS 8MB PCI video card
TrueVision Targa PCI1000
Internal 18GB F/W Disk Array with Adaptec SCSI Controller/Remis SW
Panasonic 4x/8x CDR/1 cart/Toast SW

Lease Package
Only \$8330*

8600/250 starting at \$1899!

PowerPC 8600/250 w/ 24xCD
416MB RAM, 4GB HD, 1MB Cache
Extended keyboard, Int. Zip Drive
Radius 801HR 1600x1200 Monitor
Radius Thunder 3-D PCI Video
ScanMaker V310 color scanner
Strata Studio Pro V2.0 3D Software
GCC608 11x17, 600 dpi printer w/ Ethernet connectors

Lease Package
Only \$9088*

8600/250
3-D VIDEO/AUDIO WORKSTATION

PowerPC 8600/250 w/ 24xCD
416MB RAM, 4GB HD, 1MB Cache
Extended keyboard, Int. Zip Drive
Radius 801HR 1600x1200 Monitor
Radius Thunder 3-D PCI Video
ScanMaker V310 color scanner
Strata Studio Pro V2.0 3D Software
GCC608 11x17, 600 dpi printer w/ Ethernet connectors

Lease Package
Only \$9088*

Lease System Specials

System Description	Price	Lease
PowerBook 1400CS 133/16MB/1.3GB/8x/CD	\$1499	\$53
PowerBook 1400C 166/16MB/2GB/8x/CD	\$1999	\$69
PowerBook 3400C 200/16MB/2GB/12x/CD	\$2599	\$89
PowerBook G3 250/32MB/5GB/20x/CD	\$4799	\$167
PowerMac 6500 250/32MB/4GB/24x/CD/56K Modem	\$1439	\$51
PowerMac 6500 300/64MB/4GB/12x/CD/Zip	\$1759	\$62
PowerMac 7300 180/32MB/2GB/12x/CD	\$1199	\$42
PowerMac 7300 200/32MB/2GB/12x/CD	\$1399	\$49
PowerMac G3 233/32MB/4GB/24x/CD Desktop	\$1699	\$60
PowerMac G3 266/32MB/4GB/24x/CD/Zip Desktop	\$1899	\$67
PowerMac G3 266/32MB/4GB/24x/CD/Zip AV Tower	\$2499	\$88
PowerMac 8600 250/32MB/4GB/24x/CD/Zip	\$1899	\$69
PowerMac 8600 300/32MB/4GB/24x/CD/Zip	\$2299	\$81
PowerMac 9600 300/64MB/4GB/24x/CD/Zip/IMS 8MB	\$2699	\$95

Lease Sale - Only a Few Left at these Prices!!

64 MB
Only \$149

256K Cache
Only \$29

Lifetime Warranty

Size	5vDIMMS	SIMMS	G3 Dimm
4MB	N/A	\$23	N/A
8MB	\$35	\$27	N/A
16MB	\$49	\$45	\$69
32MB	\$79	\$79	\$109
64MB	\$149	NA	\$249
128MB	\$679	NA	\$549

JAZ 2GB Ext
\$429!

JAZ 1GB Ext
\$269!

JAZ 1GB Carts
\$79

Monitors

Description	Price
Sony 100SE 15", 1280x1024, .25mm	\$337
ViewSonic 15 E655, 1024x768, .28mm	\$278
ViewSonic EA 771AV, 1280x1024, .28mm	\$519
ViewSonic 17GA, 1152x870, .27mm	\$567
Sony 200SX 17", 1024x768, .25mm	\$599
Sony 200SF 17", 1280x1024, .25mm	\$649
Sony 20" ST-300, 1600x1200, .30mm	\$1469
ViewSonic GT800 20", 1600x1280, .30mm	\$989
ViewSonic P810 21", 1600x1200, .25mm	\$1279
ViewSonic PT815 21", 1600x1200, .25mm	\$1419
RasterOps MC803 21", 1800x1440, .22mm	\$1799
RasterOps MC801HR 21", 1600x1200, .22mm	\$1849
Radius PressView 21SR, 1600x1200, .25mm	\$3169

SyQuest & ZIP Drives

Includes 2550 cable, active termination, F/WB Hard Disk Toolkit

ZIP 100 External	\$129
ZIP 100 Plus External	\$188
SyJet 1.5GB External	\$229
SyQuest 200MB External	\$379

Removable Cartridges

JAZ 2GB	\$159
JAZ 1GB	\$79
Zip 100MB	\$11
SyJet 1.5	\$65
200MB	\$55
88MB	\$33
44MB	\$33

SyJet 1.5 Carts
\$65

Optical & CDR Drives

IOMega Jaz 1GB Ext./DG Jaz 1GB Ext	\$289/269
IOMega Jaz2GB Ext., DG Jaz 2gb Ext	\$449/\$429
Ricoh 2x/2x/6x Rewrite CDR with Toast/cart	\$469
Sony 2x/6x/CDR with Toast/cart	\$399
Panasonic 4x/8x/CDR with Toast/cart	\$499

Optical Cartridges

74 MINUTE CD ROM RECORDABLE MEDIA	\$19.99
OEM 128MB	\$6.79
OEM 230MB	\$8.99
OEM 600/650MB	\$24.99
OEM 1.2/1.3GB	\$36.99

Hard Drives

Description (All SCSI-3 Ultra)	Internal	External
Quantum 2.1GB 5400 rpm Stratus 9ms	\$219	\$279
Quantum 2.2GB 7200 rpm Viking 7.9ms	\$369	\$429
Quantum 3.2GB 5400 rpm Stratus 9ms	\$269	\$329
Quantum 4.3GB 5400 rpm Stratus 9ms	\$309	\$369
Quantum 4.5GB 7200 rpm Viking 7.9ms	\$479	\$539
Quantum 9.1GB 7200 rpm Atlas II 7.9ms	\$789	\$849
Fujitsu 9.1GB 7200 Ultra SCSI 7.9ms	\$779	\$839
Seagate 4.5GB 7200 rpm Barracuda 4.7ms	\$569	\$629
Seagate 9GB 7200 rpm Barracuda 9.7ms	\$889	\$949
Seagate 4.5GB 10000 rpm Cheetah 7.9ms	\$669	\$729
Seagate 9.1GB 10000 rpm Cheetah 7.9ms	\$1069	\$1129

Tape Drives

Sony 4GB - 5200	\$769
Sony 8GB - 7000	\$899
Sony 8GB - 5000	\$799
Sony 24GB - 9000	\$1189
Sony AIT 50GB	\$2995

Scanners

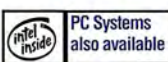
LinoColor Jade Scanner 33bit	\$479
Agfa SnapScan 310 30bit/Color It	\$189
Agfa Arcus II/Transparency/Photoshop	\$1539
Agfa DuoScan/Transparency/Photoshop	\$3299
Epson Expression 636 Professional/Photoshop	\$1379
Microtek Scanmaker III/Trans/Photoshop	\$1379
Microtek Scanmaker V310 30bit/Color It	\$149
Microtek E6 Pro/ Full Photoshop	\$519

Laser Printers

Epson Stylus Color 3000, 17x22, Serial, Ink, 1440dpi	\$1739
Epson Stylus Color 800, 8.5x11, Serial, Ink, 1440dpi	\$389
GCC EL 1212, 1200dpi, 8.5x11, Enet, 12ppm	\$1379
GCC XL 608, 600dpi, 11x17, Ethernet, 8ppm	\$1999
GCC XL 616, 600dpi, 11x17, Ethernet, 16ppm	\$2299
GCC XL 808, 800dpi, 11x17, Ethernet, 8ppm	\$2599
GCC XL 1208, 1200dpi, 11x17, Ethernet, 8ppm	\$3399
GCC XL 1208SS, 1200dpi, 11x17, Ethernet, 8ppm	\$4498

Digital Graphix

Your Value Added Macintosh Source



PC Systems also available

800-680-9062

USA & CANADA

310-783-1525 FAX
310-783-1515 INTERNATIONAL
20695 S. Western Ave #132
Torrance, CA 90501

<http://www.DigitalGraphix.com>

Order from 5:30am - 5:30pm M-F pst

Special of the Month

XLR

MACH Speed 225Mhz Upgrade
w/Adjustable Bus Settings
\$349

Apple's New G3 Systems Are Here!

Desktop Case
233Mhz/512k 32/4GB/24x.....\$1899
266Mhz/512k 32/4/24x/Zip.....\$2299

Tower Case w/AV In/Out
233Mhz/512k 32/4/24x/Zip.....\$2899

IX Micro Display/TV, PCI Cards

ix3D Ultimate Rez 8MB.....\$589
ProREZ 128-Bit 2D/3D 4MB.....\$329
IX Micro 8MB VRAM.....\$399
Turbo TV 125-Channel.....\$95

ATTO Is SCSI

Ultra SCSI-3 PCI Fast
Wide SCSI card
\$329

Radius MotoDV...\$449

MatoDV w/Radius Edit
\$729.99

\$195

Agfa SnapScan 310
AGFA Snapscan 600.....\$385
AGFA Snapscan 600 Artline.....\$519
AGFA StudioStar For Mac.....\$697
AGFA StudioStar For PC.....\$697
AGFA Arcus II Mac/PC.....\$1569
AGFA Arcus II "Solo".....\$1279
AGFA DuoScan.....\$3599

Connectix Virtual PC

Windows 95 or 3.1 Version
\$138

Miro DC30 PCI Digital Video Card

\$649

Microconversions Video Wizard

\$199

PowerBook 3400c/240

\$4299

3 PowerBook 250Mhz

\$5299

Magic Yamaha 4x/2x/6x Speed CD-R Drive External ReRecordable

\$659

Includes SCSI cable, terminator, Astarte Toast v3.5, 1Pc. CDR/ 1Pc. ReRecord

POWERLOGIX



radius

The one source for all your Macintosh needs.

<http://www.blol.com/macworld/>

Website prices updated every 30 minutes!

BOTTOM LINE

DISTRIBUTION

iiyama



AGFA

Everyone Needs RAM

All memory purchased from Bottom Line comes with a hassle free lifetime warranty!

DIMMs 168-Pin 5.0/5.5 volt	64MB 168-Pin DIMM 60ns.....\$169
PCI PowerMac, UMAX, Power	256k L2 Cache DIMM.....\$89
8MB 168-Pin DIMM 60ns.....\$19	512k L2 Cache DIMM.....\$99
16MB 168-Pin DIMM 60ns.....\$44	SIMMs 72-Pin
32MB 168-Pin DIMM 60ns.....\$69	8MB SIMM 60ns.....\$27
64MB 168-Pin DIMM 60ns.....\$129	16MB SIMM 60ns.....\$43
512k L2 Cache DIMM.....\$99	32MB SIMM 60ns.....\$79
PowerLogix 1MB Cache.....\$159	256k L2 Cache SIMM.....\$15.99
1MB VRAM DIMM.....\$26	1MB L2 Cache 61/71/8100.....\$139
DIMMs 168-Pin 3.3 volt	Apple G3 RAM SDRAM
Starmax, PowerTools, Apple 4400	Exclusively for the new G3 Macs
8MB 168-Pin DIMM 60ns.....\$39	32MB 100Mhz SDRAM.....\$119
16MB 168-Pin DIMM 60ns.....\$54	64MB 100Mhz SDRAM.....\$239
32MB 168-Pin DIMM 60ns.....\$79	128MB 100Mhz SDRAM.....\$459

Storage/Back-Up

Magic Sony 2x/6x Speed CD-R External Drive
Includes SCSI cable, terminator, Astarte Toast v3.5, 1Pc. media
\$399

Sony CDR 2x/6x Internal.....\$299

Quantum Fireball SE 3.2GB.....\$359

Quantum Fireball SE 6.4GB.....\$579

Quantum Viking 4.55GB.....\$539

Seagate Cheetah 4.55GB.....\$799

Sony Sony DDS-3 SDT-9000.....\$1199

SyQuest SyJet 1.5GB External.....\$289

IBM Ultrastar 2ES 4.3GB F/W.....\$359

IBM Ultrastar 9.1GB SCSI-2.....\$699

Acceleration!

PowerLogix G3 250Mhz 750 PowerPC 1MB Backside Cache
\$1869

TechWorks Power3D.....\$195

XLR8 MACH Speed 200Mhz.....\$297

XLR8 MACH Speed 225Mhz.....\$369

XLR8 MACH Speed 233Mhz.....\$589

XLR8 G3 250/512k w/MVP.....\$1229

MaxPower Pro + 250/512k.....\$1259

PowerLogix PB Pro 200Mhz.....\$339

PowerLogix PB Pro 233Mhz.....\$419

PowerLogix G3 250/1MB.....\$1899

PowerLogix G3 250/512k.....\$1399

Digital Cameras

Kodak DC120 \$759.99

Kodak Digital Science DC-50.....\$599

Kodak Digital DC-210.....\$899

Agfa ePhoto 307.....\$279

Apple QuickTake 200.....\$259

Sony Mavica w/Zoom.....\$689

Olympus D500L.....\$869

Olympus D220L.....\$487

lomega

lomega Zip Plus \$189

Zip Drive External.....\$143

Zip Drive Internal (Tan Color).....\$149

Zip/Jaz Internal Kits.....\$23

Jaz Drive Internal (Tan Color).....\$199

Magic Jaz Drive External.....\$349

Jaz Drive 1GB Carts. Singles.....\$89

Jaz Drive External 2GB.....\$619

Modems

USR Sportster 56k X2.....\$144.95*

Teleport 56k X2/FLEX.....\$157.99

Hayes Accura 56.6k.....\$179

Supra Express 33.6k.....\$89.99

Supra Express 56.6k w/Spkr \$119.95*

Supra Express 56.6k.....\$109.95*

PCMCIA Modems

PowerPort Platinum Pro 56.6.....\$379

GV PowerPort 56.6k Modem.....\$259

Viking Netlink 33.6k.....\$129

Viking Netlink 56.6k.....\$179

Radius

DOS Cards

Radius Reply PCI 5x86/133Mhz \$659

Radius Reply PCI P133Mhz.....\$829

Radius P166Mhz/MMX.....\$999

Displays/PCI Cards

PrecisionView 21" 26mm.....\$1799

PressView 17SR 17".....\$1599

PressView 21SR 21".....\$3199

PowerBook Extras

Podem Strap-To-Leg.....\$49.95

PB 1400 10BT Ethernet.....\$93.97

PB 1400 8-Bit Video Out.....\$159.95

PB 1400 Battery.....\$124

PB 3400 Battery.....\$174

Kensington Saddlebag.....\$69.99

Monitors

Viewsonic 17GA.....\$589

Viewsonic OptiQuest Q71 17".....\$488

Viewsonic 17EA-2 w/Spkr.....\$559

Sony 200sx 17" Monitor.....\$631

Sony 300sf 20" Monitor.....\$1458

Magnavox CM5600 21".....\$1059

Mitsubishi Pro 91TXM 21".....\$1499

Iiyama Visionmaster Pro 21.....\$1279

Iiyama Visionmaster 500 21".....\$1399

PowerBooks/RAM

PowerBook 2400c.....\$2399.99

1400 RAM Modules

Newer Tech

12MB.....\$93

16MB.....\$139

16MB.....\$139

24MB.....\$179

32MB.....\$229

3400c/180 16/1.3/CD.....\$3099

3400c/200 16/2.1/CD.....\$3399

3400c/3400 G3 RAM Modules

24MB.....\$99

64MB.....\$349

32MB.....\$129

96MB.....\$499

48MB.....\$199

128MB.....\$599

PowerBook 1400c/166

\$2379

Make sure to ask about our low interest business and personal lease options!

Apple G3

\$2959

PowerMac G3 750/266Mhz

- 750PowerPC 266Mhz!
- 32MB RAM, 512k Cache
- 24x Speed CD-ROM
- 6GB 5400RPM IDE HD
- 2MB VRAM
- Ziff Socket Processor
- 1-Year Warranty

PowerMac 7300 604e/180Mhz \$1499

- 604e PowerPC 180Mhz!
- 16MB RAM, 256k Cache
- 12x Speed CD-ROM
- 2GB 5400RPM HD
- 2MB VRAM
- Processor Upgradable
- 1-Year Warranty

PowerMac 7300/200Mhz.....1699

PowerMac 8600 604e/250Mhz \$2199

- 604e PowerPC 250Mhz!
- 32MB RAM, 1MB Cache
- 24x Speed CD-ROM
- 4GB 5400RPM HD
- 2MB VRAM
- Processor Upgradable
- 1-Year Warranty

All New Apple Systems:

6500/250 603e 32/4GB/24x.....\$1969

6500/275 Creative Studio.....\$2489

6500/275 48/6GB/24x/Zip.....\$2439

6500/275 w/MS Office Bndl. \$2699

8600/300 64/6GB 24x/Zip.....\$2939

9600/300 32/4GB/24x.....\$3559

9600/350 32/4GB/24x.....\$5232

Apple G3 233Mhz Desktop.....\$1899

Apple G3 266Mhz Desktop.....\$2299

POWERtools New! X-Force 300e G3 PPC /300Mhz

- G3 Arthur Processor
- 32MB RAM, 1MB Cache
- 8x Speed CD-ROM
- 2.1GB 5400RPM HD
- 4MB IX Micro, Kbd./Mse
- Processor Upgradable
- 1-Year Warranty, OS 8

PowerTools is now shipping the fastest MacOS system in the world!

This system is packed with performance and extras! The G3 Series "Arthur" processors are 3x's faster than the standard 604e offerings from Apple and UMAX.

- 250Mhz G3 PowerPC Arthur Processor
- 1MB BackSide Cache
- 6-PCI Slots, 8 DIMM slots
- 10BT Ethernet & MacOS 8

You can have it all!

UMAX SuperMac S900L 604e/DP250Mhz

- 2/604e PPC 250Mhz
- 32MB RAM, 512K Cache
- 8x Speed CD-ROM
- 2/4GB 7200 RPM
- IMS 128 MB, Zip
- Processor Upgradable
- 1-Year Warranty

We Offer The Complete Line:

S900L/180 32/2GB/CD.....\$2189

S900L/200 Dual Processor.....\$3192

S900L/200 32/2.1GB/CD.....\$2399

S900L/233 32/2GB/CD.....\$2874

J700/233 24/2/24x/33.6/OS8 \$1989

C500e/200 16/2GB/12x/10BT\$1095

C600e/200 16/2.1/CD/28.8.....\$1269

C600X/240 32/3GB/12xCD.....\$1779

C600X/280 32/4GB/12xCD.....\$2177

PCI/Nubus Cards

ATI VR PCI w/RangePro \$259

Includes Director v5.0

ATI Nexus GA 2D/3D 8MB.....\$549

ATTO Express PCI Fast/Wide.....\$329

Adaptec 2940UW Fast/Wide.....\$299

Targa 1000 PCI.....\$1899

Media 100qx/qxC.....\$1969/\$3795

LC/PDS 2MB VRAM 630/LCIII.....\$2399

MacPicaso 2MB VRAM NUBUS\$289

Printers

Apple Stylewriter 6500 \$489

HP LaserJet 400N 1200dpi.....\$1499

HP 6MP 600x600 Laser.....\$2920

HP SM 600x600 12ppm Laser \$1599

Epson Stylus Color 600.....\$269

Epson Stylus Color 800.....\$389

Epson Stylus Photo 6-Color.....\$369

Epson Stylus 3000 11"x17".....\$1799

Favorite Software

Quake For Mac.....\$45.95

Kai's PhotoSoap.....\$43.79

Quark Xpress v4.0.....\$739

Adobe Photoshop v4.0.....\$469

Adobe Illustrator v7.0.....\$389

GoLive CyberStudio v2.0.....\$269

Freehand v7.0 Upgrade.....\$147

MS Office 98 For Macintosh.....\$489

Symantec Suitcase v3.x.....\$65

Corel Draw v6.0.....\$389

Norton Utilities v3.5.....\$99.99

Scanners

UMAX Astra 610s *NEW*.....\$145

UMAX Astra 1200-s.....\$239

Epson Expression 636 Upgrade.....\$719

Microtek PageWiz Color.....\$159

Microtek Scanmaker V310.....\$145

Microtek Scanmaker III.....\$1429

Nikon CoolScan II Slide Scnr.....\$881

Visioneer Paperport Strobe.....\$219*

Visioneer Paperport Vx w/SCSI.....\$99*

Keyboards/Mice

TurboMouse Mac/PC.....\$94.95

Mouse-In-A-Box.....\$34.95

DGR Keyboard 105-Key.....\$47.95

Kensington Orbit.....\$51.95

Removable Media

SyQuest 44MB/88MB.....\$45/54

SyQuest 200MB/270MB.....\$9/79

CD-R 74Min. (Min. 10).....1.95

Optical Media 128MB/230MB.....15/22

Sony DAT Tapes 120M.....29

<http://www.blol.com/macworld>

Mac On! 1-800-990-5796

Shipping: \$5, 5 lbs., 2 Days Payment: No surcharge on credit cards. Corporate POs welcome. Tax: Texas residents add 8.25% sales tax. Prices: Items, prices and availability subject to change. Returns: Call for RMA number. Must be in original condition, opened software is non-refundable. Subject to a restocking fee. Original shipping is non-refundable. Apple brand products are not returnable for refund. Bottom Line Distribution cannot be responsible for errors in typography or photography. Customer Service: 512-485-4600. International Sales: Bottom Line Distribution is committed to the needs of the International Macintosh user. We offer discounted rates with DHL. Delivery to most countries is 2 to 3 days. Dealer inquiries are welcome. Language interpreters available. Address: 715 West 23rd Suite N, Austin, TX 78705, FAX: 512-485-4601.



MacConnection®

The Original Macintosh Mail-Order Source—Since 1984!

Order as late as 2:45 am. ET and
STILL get Overnight Delivery!

Order Online: www.macconnection.com



Starting At

\$1999

Monitor sold separately

Small Business Powerhouse! Power Mac 6500/275

- 275MHz 603e
- 48MB RAM (128MB max)
- 6GB HD
- 24X CD-ROM
- 100MB Int. Zip Drive
- 56Kbps Faxmodem



Includes Microsoft Office!
45746

45745 Power Mac 6500/250	\$1999
(250MHz/32MB/4GB/24X/56K modem)	
45746 Power Mac 6500/275	2799
(275MHz/48MB/6GB/24X/100MB Zip Drive)	
45750 Power Mac 6500/300	2999
(300MHz/64MB/6GB/24X/56K/100MB Zip Drive)	

Faster and More Useful Than Ever!

Newton MessagePad 2100



FREE

LunarLanding, SubPatrol and 2 WriteRights! (\$70 value)

- 162 MHz StrongArm SA-11 RISC processor
- 8MB RAM (4MB DRAM, 4MB Flash)
- 8MB ROM
- Built-in microphone and speaker
- Handwriting recognition software
- Two PC Card slots

47973 Newton MessagePad 2100	\$999
24700 Newton Keyboard	79.95
45215 8MB Flash Memory Card FR	99.95
42405 Write Stuff	39.95

G3
"The Fastest Laptop Yet!"
—Macworld 1/98



Only \$5699

Packed with high-performance features!

PowerBook G3/250

- 250MHz PowerPC G3 processor
- 32MB RAM (160MB max)
- 5GB Hard Drive
- 20X CD-ROM (max)
- 12.1" active matrix color display
- 512K L2 Backside Cache

48162 Apple PowerBook G3/250	\$5699
(250MHz/32MB/5GB/20X)	
48164 G3 Lithium Ion Battery	259.95
35928 G3 PowerBook AC Adapter	49.95

ORDER TODAY!

NEW! QuarkXPress 4.0
FREE Photolines Visual Symbols 2
\$150 Value!
Exclusive Bundle!
48275 **\$689.95**

NEW! Quicken Dlx. 98 & MacTax Dlx. Bundle
Get more from your money!
48658 **Only \$59***
*After mail-in rebates
-\$20 for previous Quicken users and \$20 for MacTax

NEW! Macromedia DreamWeaver
The Web design tool of your dreams!
49193 **Only \$289.95**

FREE BREAK! Connectix Speed Doubler 8
Speed up your Mac!
46532 **Only \$29.95***
*After \$25 mfr.'s rebate for previous owners

Peripherals!

Iomega Zip Drive

- 100MB
- SCSI ext. drive
- FREE 100MB Zip Disk with ZipTools

Refurbished - While Supplies Last!

Give yourself some space!
Only \$99.95
47085

Arcus II

A great choice for professional applications!



Includes Adobe Photoshop!

AGFA
Only \$1699
19814



Olympus D320L Digital Camera

Ideal for producing larger, high-quality images!

Only \$699
Supplies Limited!



HITACHI MC6215 17" Monitor

- Vibrant, accurate color
- 15.9" viewable image size

Super Low Price!
Only \$499
43312



MOTOROLA Lifestyle 33.6K Modem

CALL NOW!
Only \$49.95
Lowest-priced 33.6K modem available!
47628

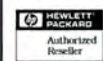


Connectix Color QuickCam

Full motion in full color, and dazzling still images too!
Only \$189.95
26954



Spectacular color and premium performance at a great price!



HEWLETT PACKARD
Expanding Possibilities

Hewlett-Packard DeskJet 870Cse

- Prints 8ppm b&w, 4ppm color
- 600 x 600dpi b&w, 600 x 300 color
- 150-sheet capacity
- Includes CD-ROM with business communications templates and sample paper pack

Only \$399
40618

Sony 24" Multiscan W-900 and FREE ATI Nexus GA Bundle

- 22.5" viewable image size
- Resolutions up to 1920 x 1200 at 76Hz
- Brighter, sharper picture and improved contrast
- On-screen displays for precise, digital control over monitor settings

Widen Your Horizons!
Get 30% more screen real estate than 20" monitors with nearly the same footprint!



Only \$4999
45829

7-Time Winner! Best Mail-Order



OUR POLICY • VISA, MASTERCARD, AMERICAN EXPRESS, and NOVUS cards. No surcharge. • Most products are covered by manufacturer's warranty against defects for at least 30 days from the invoice date. • All returns require prior authorization; please call for an RMA. • We are not responsible for typographical errors. • Pricing and promotions are subject to change without notice. • Continental U.S. Shipping Charges \$4.95 per order up to 3 pounds. On orders over 3 pounds, shipping is \$4.95 plus an additional \$1.25 per pound or fraction thereof. Please call for weight/price charge information. Items of excessive size and/or weight may require additional days to deliver via a freight carrier. Please check with your sales rep for more details. Barring events beyond our control, all credit card orders placed in weekdays by 2:45 a.m. ET will ship Airborne Express for delivery the next business day. Saturday delivery available to many areas upon request at no additional charge. Order all day Saturday thru noon Sunday for Monday delivery. Some areas require an extra day delivery. APO/FPO, International orders and Hawaii, Alaska, Canada, Puerto Rico & U.S. Virgin Islands: Shipping may require additional time and charges. All other areas: Call 603-446-4444 or FAX 603-446-7791 M-F 9 a.m.-5:30 p.m. ET/PT ©1997 PC Connection, Inc., Milford, NH. MacConnection & the raccoon characters are registered trademarks of PC Connection, Inc. All other trademarks remain the property of their respective companies.

Get the Best for Less!

NEW!
Extended service plan
Supplements the manufacturer's warranty for a full 4 years from date of purchase!

As Low As
\$3799

Built-in 33.6 modem w/10BaseT support!

Multimedia Power for the Road!

PowerBook 3400/200

"The Kitter" full motion digital video camera for the road!

Only \$329.95

48982

14145 Apple PowerBook 3400C \$3799
(200MHz/16MB/2.0GB)

38464 Apple PowerBook 3400C 4499
(240MHz/16MB/3.0GB)

NEW!

G3 266 Includes 100MB Zip Drive!

Starting At Only \$1999

Monitor sold separately

Advanced Technology, Incredible Performance!

Power Macintosh G3 266

• 266MHz PowerPC G3
• 32MB RAM (192MB max)
• 4GB Hard Drive
• 24X CD-ROM
• 512K L2 Backside Cache
• Fast 66MHz system bus

48158 Apple Power Mac G3 233 \$1999
(G3 233MHz/32MB/4GB/24X)

48159 Apple Power Mac G3 266 2399
(G3 266MHz/32MB/4GB/24X/Zip Drive)

48160 Apple Power Mac G3 266 MT 2999
(G3 266MHz/32MB/6GB/24X/Zip Drive)

Only \$1395

Monitor sold separately

Network Ready!

Super Powers, Super Price!

UMAX C500e/240

• Upgradeable 240MHz 603e
• 24MB RAM (144MB max)
• 3.0GB HD
• 24X CD-ROM
• 1MB VRAM
• 10BaseT Ethernet w/48211
• Netdoubler SW

48211 UMAX C500e/240 \$1395
(240MHz/24MB/3GB/24X/1MB VRAM/10BT)

48212 UMAX C500LT/240 1295
(240MHz/24MB/3GB/24X/1MB VRAM)

Best Deals on Hardware & Software!	
Utilities 46532 Speed Doubler 8 \$54.95 44701 Real PC 79.95 40682 Norton Utilities Mac 97.95 32164 SAM v4.5 69.95 48715 Disk Drive TuneUp 59.95 48713 CD/DVD TuneUp 59.95 47374 Virex 5.8 65.95 49791 Hard Disk ToolKit 2.5 129.95 Graphics & Design 41786 NetObjects Fusion 294.95 40314 Total Xaos Bundle 169.95 49822 Extensis Mask Pro 289.95 31756 Pantone HexWrench 299.95 47735 QuarkXPress 4 Mac 689.95 43868 Adobe Photoshop 4 Mac 539.95 43871 Adobe Illustrator 7 Mac 369.95 49193 Macromedia DreamWeaver 289.95 Business 48658 Quicken Deluxe 98 and MacIntax 59* *After \$40 combined mail-in rebates 44771 Mac OS 8 upgrade 69	44990 Filemaker 4.0 upgrade 99 44778 ClarisWorks Office with FREE Star Trek 69* *After \$30 upgrade mail-in rebate 46286 MAC P&L 119.95 Games 42144 Diablo 46.95 45697 Riven (Sequel to Myst) 49.95 45362 Myth 44.95 42119 Starfleet Academy 49.95 Personal Productivity 46966 Tripmate for Mac 159.95 43723 Street Atlas USA 4.0 for Mac 42.95 44178 Reunion 5 upgrade from Reunion 4 39.95 24643 Learn to Speak Spanish 79.95 43258 Complete National Geographic Magazine - 108 years 169.95 Accessories 39536 Kensington Orbit 69.95 32497 Masterlock Notebook Security Cable 39.95 25696 Mouse in the Box 39.95 33990 Solar Panel Mercury II 299.95

Best Deals on Hardware & Software!	
CD-ROM 38365 La Cie Ext 2x6 CD-R Drive w/ Toast 399 38347 MDS 12X External SCSI CD-ROM 139.95 46415 Hi-Val Soundstax 24X CD-ROM 189.95 46412 MDS 24X External SCSI CD-ROM 169.95 Digital Cameras 39582 Kodak DC120 Digital Zoom 799 45096 Ricoh RDC-300 Digital Camera 499 43512 Sandisk 20MB Compact Flash w/PCMCIA Adapter 279.95 43841 Fuji DX-5 Digital Camera 299.95 Video Cards & Accelerators 44886 ATI Nexus GA 549 40281 Imagine 128 Ser2 8M PCI 799 37869 IMS Turbo TV PC & Mac TV Card 99 45169 MAXpower Pro G3 250/512K 1099 40465 RenderPix 502-A 2949 Monitors 43348 Hitachi MC7515-SS 19" 999 38305 Mag Innovation 710V2 17" 499 32695 Mag Innovation DX700T 17" 579 36276 Mitsubishi 91 TXM 21" 1499 39386 ViewSonic Optquest Q53 15" 269	Storage 25447 Jaz 1GB SCSI Insider 299.95 24205 Jaz 1GB Single Disk 124.96 44384 Gig O' Color 10 pack 149.95 32816 Sylent 1.5 cartridge 3 pack 199.95 19867 Zip Disk 10-Pack 129.95 Printers 37819 Epson Stylus Color 600 269 37817 Epson Stylus Color 800 399 42275 Epson Stylus Color 3000 1999 40618 HP Deskjet 870Cse Printer 399 47066 HP LaserJet 4000N Printer 1449

FREE! CALL TODAY!

For your FREE MacConnection or PC Connection catalog subscription!
(Mention source code 398MW) 800-600-9256

FREE SERVICE! Custom Configured Systems

Start Saving!
ask about... LEASING OPTIONS for BUSINESS
call 800-800-0014

Call for details!

20,000 HOT PRODUCTS 24 HRS A DAY!

800-600-9256

www.macconnection.com
Secure Online Shopping!

398MW

Circle 145 on reader service card

MACWORLD March 1998 149

The industry's solution showcase



You depend on the Macintosh to get work done faster, to stay connected with colleagues and friends, and turn your best ideas into action. Which is why you can't afford to miss the largest event that brings you the world of the Mac.

Hundreds of New Products and Industry Insights!

Only at MACWORLD Expo can you see and try thousands of products first-hand... learn from Macintosh experts through conferences and keynotes... talk with other Macintosh users and vendors... and stay on top of new developments that could impact your buying decisions. You'll gain valuable insights into how innovative companies are unleashing the power of the Macintosh OS.

Come evaluate cost-saving solutions for:

- Publishing, entertainment and multimedia
- Web site design and Internet navigation
- Networking, intranets and enterprise-wide connectivity
- Education and R&D
- Business and telecommuting

Make plans to attend MACWORLD Expo today!

If the Macintosh is part of your business, MACWORLD Expo is your lifeline. MACWORLD Expo is the industry's premier Macintosh event, and dramatic software introductions scheduled for 1998 may make this year's event the most exciting ever. Gain new insights into the future world of Macintosh... see the hottest and coolest new products... and get the inside view of the Macintosh OS platform. Register to attend today.

Owned & Produced by:

IDG
WORLD EXPO

Managed by IDG Expo Management Company

Sponsored by:

Macworld
MacWEEK

For Details:

www.macworldexpo.com
or 800.645.EXPO

Macworld EXPO

san francisco
new york



Macworld/Pro Conference

**The Macintosh Professionals
Conference only at: MACWORLD
Expo/San Francisco and New York.**

Please send more information on MACWORLD Expo

- ☐ San Francisco ☐ New York
☐ Attending ☐ Exhibiting

MCW

Name _____

Title _____

Company _____

Address _____

City/State/Zip _____

Phone _____ Fax _____

email _____

Mail to: MACWORLD Expo, 1400 Providence Highway,
P.O. Box 9127, Norwood, MA 02062. Or Fax to: 781-440-0363

THIS IS NOT A REGISTRATION FORM.

Divine information.
Sent from the high tech heavens.
Your day-to-day just got a whole lot easier.



The Bible Series— from IDG Books Worldwide

100% Comprehensive. 100% Authoritative. 100% of What You Need to Know.

The Bestselling Bible Series is Loaded with Features:

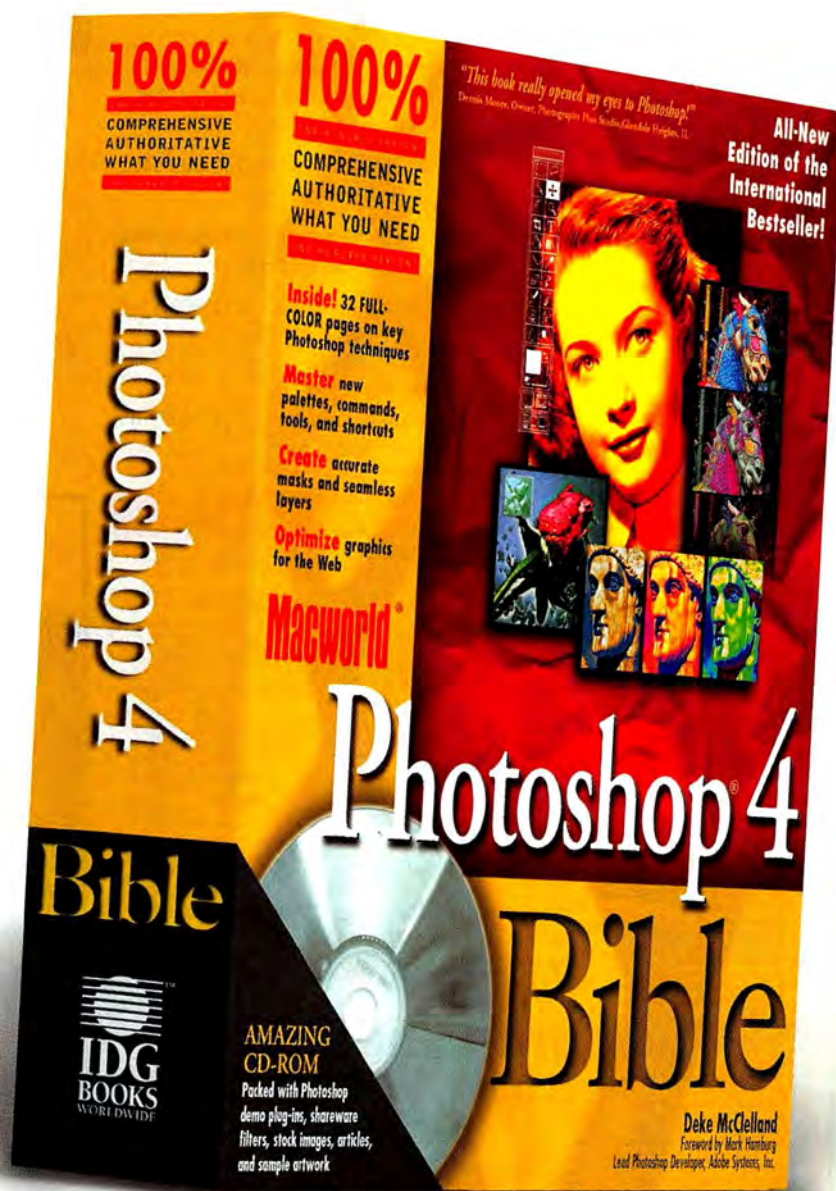
- ➔ Expert authors—including many software trainers and consultants
- ➔ A-to-Z coverage of high tech topics—from software programs to Mac programming
- ➔ Easy-to-read format—complete with helpful charts, tables, and step-by-steps
- ➔ A Bonus CD-ROM—packed with time-saving and entertaining programs personally selected by the author!
- ➔ Bibles cover all the hottest topics!
 - Macworld® Photoshop® 4 Bible by Deke McClelland ISBN: 0-7645-4005-X \$49.99 w/ CD
 - Macworld® Illustrator® Bible by Ted Alspach ISBN: 0-7645-4027-0 \$39.99
 - Macworld® FreeHand™ 7 Bible by Deke McClelland ISBN: 0-7645-4015-7 \$39.99
 - Macworld® Mac® OS 8 Bible by Lon Poole ISBN: 0-7645-4036-X \$34.99

Check Out These Other Magnificent Mac Titles from IDG Books!

- Macworld® Mac® Secrets®, 4th Edition
- Macs® For Dummies®, 5th Edition
- Mac® OS 8 For Dummies®
- Mac® OS 8 For Dummies® Quick Reference
- Macworld® PageMaker® 6.5 Bible
- Macworld® Photoshop® 4 Instant Expert
- Mac® Programming For Dummies®, 2nd Edition
- Macs® For Kids & Parents™
- Macworld® ClarisWorks® Office Bible
- Macworld® QuarkXpress® 4 Bible

**Pick up a copy
at your favorite
bookstore or
software store
or call 800.762.2974
(24 hrs. a day, 7 days a week)**

or order from
www.idgbooks.com



For information on volume order discounts
(25 or more copies) call Andrea Lopez at 650.655.3090

PRODUCT INDEX

Category	Page No.	Category	Page No.
Business Operations .....152-153		Peripheral Products .....156-157	
Bar Code		Magnetic Media	
Inventory Management		Cd Rom	
Print Utility		Services .....180-182	
Video/Display		Color Printing	
Communications/		Data Recovery	
Networking .....156		Digital Production	
Cross Platform		Repair	
Education/		Systems & Peripherals ...156-177	
Entertainment .....153-155		Account Managers ..800.825.4237	
Discount Software		Spencer Frasher.....212.503.5864	
Graphics .....153		sfrasher@zd.com	
Translation		Michelle LeWinter...212.503.5122	
Memory & Upgrades ....177-180		mlawinte@zd.com	
Memory Upgrade		Kristin Newman.....212.503.5862	
Digital Advertising Coordinator:		knewman @zd.com	
Brian Mullin ....415.267.1735		Jessica Turko.....212.503.5140	
brian_mullin@macworld.com		jturko@zd.com	
		Sales Manager:	
		Monifa Kelly.....212.503.5155	
		mkelly@zd.com	

CALL US ABOUT MACWORLD SPECIALS!

**IF WE DON'T SELL IT,
IT'S NOT WORTH LOOKING AT.**



**PANELIGHT IS YOUR ONE STOP SHOP FOR ALL LEADING BRANDS
SALES, RENTALS, & LEASES • MONEY BACK GUARANTEE.**

**TRUSTWORTHY
TECHNICAL
GUIDANCE
AND SUPPORT**

**QUICK
DELIVERY**

**MONEY-BACK
GUARANTEE**

Epson
CTX
nView
In Focus

**CALL
PANELIGHT FOR
OUR
FREE CATALOG:
1-800-726-3599.**

**MON.-FRI., 6:30AM-5:30PM P.S.T.
24-HR. FAX: 415-986-3817
OR E-MAIL: SALES@PANELIGHT.COM**

HTTP://WWW.PANELIGHT.COM

**PANELIGHT DISPLAY SYSTEMS, INC.,
P.O. Box 190940,
SAN FRANCISCO, CA 94119.
OR CALL 415-772-5800.**

**TREMENDOUS
SELECTION OF
ALL LEADING
PROJECTORS**

**SALES, LEASES
OR RENTALS**

**DISCOUNT
PRICES**

Toshiba
Polaroid
Proxima
Panasonic

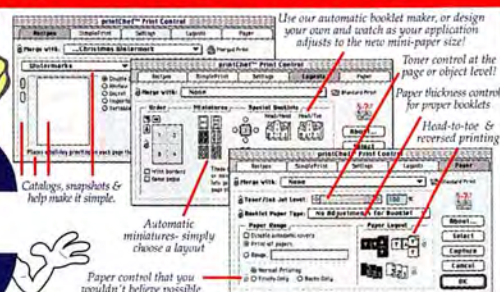


**CALL THE EXPERTS
AT PANELIGHT
DISPLAY SYSTEMS, INC.**

CIRCLE 431 ON READER SERVICE CARD

printChef = POWER PRINTING!

See why thousands of people and
your competition are turning to
printChef to get the
print job done!



"This (simple) extension has more printing
power than packages priced at \$5,000"

Rick Bantelman, DANKA

To boost the printing power of any application,
call (800) 648-6840
or try our demo at **www.mindgate.com**

printChef

Introductory price \$45 (until 3/31/98)

...so that everyone can make their printer sizzle right now!

60-day money-back guarantee

Installs in English, French, German, and Spanish

printChef is a print extension that sits
between any application & any printer
driver... It uses **Print Recipes** that you
design to control any application's output...

System 7+ required! For 680x0 & any PowerMac.
Works with ANY printer & ANY application.
printChef's miracles require only 32K of memory.
QuickDraw GX is NOT required!

MindGate, printChef & their logos are registered trademarks.
File-the-blank is a trademark, & "is not printing magic... it's
printing science!" is a trademark of MindGate Technologies.

MindGate Technologies, Inc.
164 Oliver Smith Road
Pittville, TN 37335-5335

or thru
MacWorld
800-255-6227



MindGate Technologies, Inc.
164 Oliver Smith Road
Pittville, TN 37335-5335

Order Direct
List Price: Base unit \$95
Net: \$15-\$25/unit
Worldwide: (931) 937-6800
Fax Orders: (931) 937-6801



BAR CODE
SOLUTIONS

• LABELING SOFTWARE

FREE EXPERT CONSULTATION

• BAR CODE FONTS

FREE LIFETIME TECHNICAL SUPPORT

• SCANNERS/LASERS

MONEY-BACK GUARANTEE

• GRAPHIC UTILITIES

UPC/EAN, CODE 39, ITF, POSTNET, 2-D

International Bar Code Expertise
300,000 Customers Worldwide

**Bear Rock
TECHNOLOGIES**

800-232-7625

916-672-0244 FAX: 916-672-1103

Visit Our Website At:
www.bearrock.com

CIRCLE 433 ON READER SERVICE CARD

CIRCLE 430 ON READER SERVICE CARD

Software Blowout!!! Tel: 1-800-785-0048

Microsoft	
MS Office 4.21 (Word, Excel, Powerpoint)	\$199
MS Word 5.0/6.0.1	\$75/125
MS Excel 5/Powerpoint 4	\$150
Front Page	\$75
MS Project 4.0	\$250
MS Office Win 97	\$295

Adobe	
Photoshop 4.0	\$375
Pagemaker 6.5	\$350
Illustrator 7.0	\$230
Premier 4.2	\$335
After Effects/Studio Bundle	\$335/1180
Framemaker 5	\$335

Macromedia	
Freehand 7.0/VectorEffects	\$215
Freehand Graphic Studio	\$299
SoundEdit 16 Deck II	\$275

Fractal Design Painter 4.0	\$235
----------------------------	-------

Call for Corel, Claris, Caere, Metatools, Strata, Specular, Symantec, and Denaba products.

SUPER SOFTWARE
818-346-1890 (FAX) 818-364-6350
Call 9AM to 6PM PST Since 1983

Attn: Students-Teachers-Schools

ArchiCAD 5.0	\$99	Japan.LangK	\$125
Authorware 4	739	Kai's PowerT.	79
AutoCad R12	199	KPT Bryce 3D	115
CodaFinale 97	245	LightWave 3D	Call
CorelDRAW 6	165	MiniCAD 7	315
Debab.Toolbox	219	Norton Utilities	65
Director 6	339	Painter 5.0	205
Electric Image	1329	SAM 4.5	45
Eye Candy 3.0	74	SoftWindow 95	198
FileMaker Pro	135	System 8.0	84
Final Draft 4.1	145		
Flash 2.0	145		
Form-Z 2.92	Call		

"We accept Purchase Orders from schools. Call for Adobe, Microsoft & QuarkXpress!"

1-888-416-4555 Call for Catalog!
Ace Software Express Inc.

Bar Code Headquarters



- 30 Day \$ Back Guarantee
- Free Shipping in USA
- Toll Free Tech Support

- Portable Batch Readers
- Cordless Interactive RF Bar Code Readers
- ADB Bar Code Readers
- Wand, Laser, CCD, Magstripe or Slot Badge
- PostScript Bar Code Fonts

WORTHINGTON
DATA SOLUTIONS

1-800-345-4220

Or Call 408-458-9938

Website: www.barcodehq.com



Bar Code Pro v3.5 with Veribar



Create perfect PostScript (EPS) bar code graphics for Quark, PageMaker, Illus., etc.

Bar Code Pro features:

- ✓ All popular bar code symbologies
 - ✓ Any printer resolution! No fonts required.
 - ✓ No prior bar code experience necessary.
 - ✓ No more bar code film masters.
 - ✓ Veribar built-in verification (optional).
 - ✓ Pays for itself in a single use.
- "Takes sixty seconds to install, five minutes to master!" — MacWorld

CALL FOR FREE DEMO

SNX www.snx.com
(formerly SYNEX)

Tel: (800) 619-0299 Fax: (718) 768-3997

CIRCLE 434 ON READER SERVICE CARD

Newton Joins the Mac-Barcode Family!

One Stop Shopping with Friendly Support from the Experts



Newton's Walk-About™ Mac-BarcodeProLabel Software SmartLaser/SmartScanner/SmartPen Call for Literature & Free Demo Disk

The Mac-Barcode Co.
800-733-7592
<http://www.mac-barcode.com>

POINT OF SALE INVENTORY CONTROL

- Retail
- Rentals
- Service
- Manufacturing
- Multi Location

Bar Code/Magnetic Stripe Readers
Receipt Printers • Cash Drawers
Credit Card Auth. & Deposit Software
Download Demos and Interactive Catalog at our Web Site: <http://www.posdirect.com>
call, fax, or e-mail for a FREE CATALOG
(800) 622-7670 sales@posdirect.com
(618) 985-8237 TEL • (618) 985-3014 FAX
Dealer Inquiries
30 day MBG

P.O.S. DIRECT

CIRCLE 432 ON READER SERVICE CARD

Want bargains online?

Bookmark the
Mac Shopper at:



www.macworld.com/buyers/shframed.htm

Advertise at (800) 888-8622

STUDENTS, TEACHERS, SCHOOLS SAVE UP TO 80%



319.00
Diehl Graphsoft
MiniCAD 7

Azimuth 2.5 ... 199
Blueprint 5 ... 149

We'll Beat ANY Advertised Price!!

Adobe, Microsoft, Lotus, & Borland products available.

3D Website Builder	99	Final Draft 4.1	125	NetObjects Fusion 2.0	149
4th Dimension 6.0	249	Finale 97	249	Nisus Writer 5.0.1	85
Authorware 4.0	749	Fractal 3D Suite 2.0	299	OmniPage Pro 7.0	329
Canvas 5.0.3	179	Fractal Art Dabbler 2.0	39	PageTools 2.0	69
Claris HomePage 2.0	59	Fractal Detailer 1.0	129	Phototools 2.0	69
Claris Works 5.0	79	Fractal Expression	99	Quickkeys 3.5.2	85
Cliff Notes Studyware	19	Fractal Painter 5.0	99	QX-Tools 2.0	69
CodeWarrior Pro 2.0	119	Fractal Poser 2.0	79	Roy Dream Studio 5.0	129
Conflict Catcher 4.0	59	FreeHand 7.0	149	Roy Dream 3D	69
CorelDRAW Ste 6.0	139	FreeHand GS 7.0	199	SoftWindows 95 4.0	199
Debabelizer Toolbox	229	Infiniti-D 4.0	329	Strata Media Paint 1.x	179
Director 6 w/E-Doc	349	Imagica ZIP Drive	139	Strata Studio Pro 2.1	549
Director MMS 6	679	Kai's Photo Soap	39	SuperCard 3.0	129
Director MMS Upgd	399	Kai's Power Tools 3.0	85	Total Xaos Bundle	129
Electric Image Broadcast	1349	KPT Bryce 3D 3.0	119	Umax Astra 600S	239
Encore 4.2	269	KPT Vector Effects	99	Wacom ArtPad 4x5	129
EndNote Plus 2.x Stu.	99	LightWave 3D 5.5	799	Wacom ArtZ II 6x8	285
Epson Stylus 800	399	Logomotion 2.1	55	Wacom ArtZ II 12x12	399
Eye Candy	79	Mac OS 8.0	85	Web Graphics Suite	69
FileMaker Pro 4.0	119	Mathematica 3.0 Stu	149	WordPerfect 3.5.1	39

WebSite www.ElectronicImage.com • Fax (510) 798-2464 • FREE Catalog

TOLL FREE 1-888-EDU-SOFT

CIRCLE 437 ON READER SERVICE CARD

CADMOVER v.5 What good is a built in translator if it doesn't work?

You've worked hard and now it's time to use those files in another program. You try to import them & all you get is garbage. Not with CADMOVER. For over ten years we've been helping people beat their deadlines, no re-drawing, no touch-ups.

File formats: DWG, DXF, EPSF, PICT, CGM, IGES, HPGL, STL, MiniCAD, DDES2, etc... Internal Features: scaling, 2D/3D views, font mapping and more. With 17 decimal place accuracy redrawing is a thing of the past.



voice 800-579-2244 • fax 540-839-3489 • www.kandusoftware.com

Student - Teacher - School Discounts!

18 Perfect People 1.0	\$199
Adam Comprehensive Student ED	\$99
FastTrack Schedule 5.0	\$139
Private File	\$35
Spring Cleaning 2.0	\$35
StuffIt Deluxe 4.5	\$55
Eye Candy 3.0 After Effects	\$349
SuperCard 3.0	\$129
Andromeda Series 3 OR 4	\$75
Andromeda Shadow Filter	\$75
Terra Forma Regional 1,2 OR 3	\$129
DesignWorkshop 1.7	\$199
FileGuard 3.0.8	\$119
Astound 3.0	\$99
Page/Edges 3.0	\$135
Photo/Graphic Edges V1,2 OR 3	\$135
WebVise Totality	\$99
AutoCAD R12	\$199
Form 2 3.0	CALL
Elastic Reality 3.0	\$1149
BBEdit 4.5	\$79
Final Draft 4.1	\$149
M.Y.O.B 7.0	\$49
BitStream Collection	\$129
TypeShop Pro	\$129
Kidpix Studio	\$35
Sculpt 3D 4.2	\$219
Conflict Catcher 4.0	\$59
Spell Catcher 1.5	\$49
Cricket Graph III 1.5.3	\$79
OmniPage Pro 7.0	\$329
Metro 3.5	\$129
Cumulus Desktop 3.0	\$95
QuickKeys 3.5.2	\$85
MicroGrade	\$69
Anubis RAID	\$79
Backup Mastery	\$59
Chromatic	\$79
HomePage 2.0	\$69
HyperCard 2.3.5	\$89
Japanese Language Kit 1.2	\$129
QuickTime VR Authoring Studio	\$299
Remote Access Server 3.0	\$109
ClarisWorks 5.0 Office	\$89
Classic PIO Partners	CALL
Cliff Notes College Bound Bundle	\$35
Vivace Practice Studio	\$199
Speed Doubler 8	\$55
Virtual PC	\$149
WordPerfect 3.5.1	\$69
CorelDRAW Suite 6	\$169
Life Forms 2.1	\$199
ChemOffice Pro 4.0 Student	\$299
Retrospect 4.0	\$109
WildRiverSSK 1.1	\$85
Canvas 5.0.3	\$179
DenebaCAD 1.0	\$269
MathType 3.5	\$99
Aurorix 2	\$159
CineLook 1.0 Broadcast	\$429
Digital Textures Bundle	\$199
Illuminaire Studio	\$1299
Lion King Animated StoryBook	\$36
Logic 3.0	\$249
Epson Expression 636Executive	\$769
Epson Stylus Color 1520 InkJet Print	\$789
Epson Stylus Color 3000 InkJet Print	\$1929
DeBabelizer Tool 1.6.5	\$229
Intelligence 3.0	\$69
Mask Pro 1.0	\$199
Portfolio 3.0	\$69
QX Effects 3.0	\$89
Hard Disk Toolkit 2.01	\$109
Killer Transitions	\$189
TelePort 56x2 Modem	\$179
Power Trans German 2.0	\$95
Archicad 5.0 Student	\$129
Grafiar 1998 Encyclopedia Deluxe	\$69
Teacher's Tool Kit	\$69
CADtools 1.0	\$99
Squizz! 3.0	\$69
Textissimo 2.0	\$69
PowerPrint 3.0.2	\$89
StyleScript 3.6	\$89
Inspiration 5.0	\$79

WE WILL BEAT ANY ADVERTISED PRICE * LATEST VERSION & FULL PACKAGES

\$599

Photo Design
Illustration
Page Layout

Market-Leading Page Layout software
Market-Leading Illustration software
Market-Leading Photo Design software

From the world's leading desktop publishing software manufacturer... 3 market leading DTP Tools

DeskTop Publishing Bundle

\$269

Boris FX 3.0

Video Effects for Premiere

\$139

FileMaker Pro 4.0

#1 Relational Database

\$249

Coda Finale 97

Music Notation Software

\$159

Berserk 1.3

\$49

Virex 5.8

AntiVirus Program

\$619

Jaz 2GB External Drive

Expand your Hard Drive Without Limits

\$179

CyberStudio 2.0.1

Website Building Software

\$149

Creator2

Desktop Publishing & Layout

\$119

CodeWarrior Pro 2

C/C++ Programming

\$85

Mac OS 8

System Software for the Macintosh

\$329

Infini-D 4.0

3D Modeling & Animation

\$89

PhotoTools 2.0

Photoshop Plug-In

Call for FREE Catalog!
(800) 831-2295
Includes Complete Price List & Free Product Info.

- **SAME DAY SHIPPING ON MOST ITEMS.
- **ADORE, SYMANTEC & MICROSOFT PRODUCTS AVAILABLE TO QUALIFIED STUDENTS, TEACHERS & SCHOOLS.
- **SCHOOL PURCHASE ORDERS WELCOME.
- **NO SURCHARGE ON CREDIT CARDS.
- **IBM & MAC PRODUCTS AVAILABLE.

Priority Code: 3086

The
SOFTWARE
Source

Visit our **NEW** Web Site!
<http://www.swsonline.com>

1-800-831-2295

1750 Brielle Ave, Unit A-2
Ocean, NJ 07712
PHONE (732) 695-2100
FAX (732) 695-9371
E-MAIL: SFTSWS@AOL.COM

Student - Teacher - School Discounts!

WE WILL BEAT ANY ADVERTISED PRICE * LATEST VERSION & FULL PACKAGES

\$479



Artist's Dream Bundle
Wacom Art Z II 6x8 & Painter 5.0

\$379



Epson Stylus 800
Color Inkjet
High performance
1440x720 dpi Printing

\$119



Bryce 3D
3D Terrain And Animation

\$1349

Your Career In 3D Animation Begins Here

ElectricImage™ BROADCAST
Hi-Speed Rendering

\$349




Director 6 E-Doc
Director 6 with Online Documentation

\$79



Eye Candy 3.0.1
Special Effects for Photoshop

\$199



Freehand Graphics Studio
Includes FreeHand 7, Fontographer, Extreme 3d, and xRES

\$149



NetObjects Fusion 2
Smart Way to Build Web Sites

\$339



MiniCad 7.0.1
2D/3D Cad Software

\$129



Total Xaos
Includes Paint Alchemy 2.0, Terrazzo 2.0 & Typecaster

\$79



MagicMask
Masking Tool for Photoshop

\$79



DOUBLOR PACK
Includes Ram Doublor 2 & Speed Doublor 8

CALL



LightWave 3D 5.5
Modeling & Animation

Call for FREE Catalog!
(800) 831-2295
Includes Complete Price List & Free Product Info.

**SAME DAY SHIPPING ON MOST ITEMS.
**ADOBE, SYMANTEC & MICROSOFT PRODUCTS AVAILABLE TO QUALIFIED STUDENTS.
**AVAILABLE TO QUALIFIED STUDENTS.
**TEACHERS & SCHOOLS.
**SCHOOL PURCHASE ORDERS WELCOME.
**NO SURCHARGE ON CREDIT CARDS.
**IBM & MAC PRODUCTS AVAILABLE.

Visit our **NEW** Web Site!!
<http://www.swsonline.com>

MovieWorks Interactive 4.0	\$79
ZipPlus 100 Ext SCSI/Parallel	\$199
ClearVideo 1.2	\$229
Screen Caffeine Pro 2.2	\$75
JudsonRosebush Wildside Bundle 5	\$149
Topdown Flowcharter 4.5	\$155
Orbit Trackball	\$69
LightningDraw Gx 1.0.3	\$99
Live Picture 2.6.1	\$199
PhotoVista	\$65
Trackman Marble	\$85
Mtropolis 1.1	\$549
Mac Academy Tutorial Videos	\$35
Authorware 4.0	\$749
Director 6 Multimedia Studio	\$679
Flash 2.0	\$149
SoundEdit 16+ Deck II	\$249
Mosaic 1.5	\$249
Mathematica 3.0 Student	\$149
3D Suite 2.0	\$299
Art Dabbler 2.1	\$39
Kai's Photo Soap 1.0	\$39
Kai's Power Goo 1.0	\$39
Kai's Power Tools 3.0.2	\$85
Logomotion 2.1	\$39
Painter 5.0	\$219
Poser 2.0	\$79
RayDream Studio 5.0	\$129
Color It! 3.2	\$39
Enhance 4.0	\$129
Nils' Actions	\$49
PC MACLAN 6.1	\$129
Netscape Communicator Pro 4.0.1	\$49
EndNote Plus 2.2 w/EndLink	\$165
Nisus Writer 5.1	\$85
Now Up To Date 3.6.5	\$79
Studio VisionPro 3.5.4	\$499
ObjectDancer 1.1	\$199
MacInDos Plus 2.0	\$45
Pantone Personal Color Calibrator	\$35
Encore 4.1.1	\$249
SPIN Panorama	\$79
MeshPaint 3D 1.6	\$69
Storyboard Artist 1.5	\$329
LabVIEW Student	\$99
Matlab 5.0 Student	\$99
SPSS 6.1 Student	\$99
Eudora Pro 3.1.1	\$35
Coda 2.0	\$249
HyperStudio 3.1	\$119
RubberBall Faces	\$199
PosterWorks 4.0	\$249
Jmp 3.2	\$329
Dramatica Pro 2.0	\$199
PageMaker Fraemz PS Deluxe	\$129
HotMetal Pro 3.0	\$85
DeltaGraph 4.0	\$89
SigmaPlot 5.0	\$199
ListSTAR 1.1	\$329
WebSTAR 2.1	\$329
Cubase VST 3.5	\$199
StudioPro 2.1	\$549
Vision 3D 5.0	\$29
Hollywood FX 3.0.5	\$359
KaleidaGraph 3.0	\$119
Media Cleaner Pro 2.0	\$249
Myrmidon 2.0	\$35
DAVE 1.0	\$65
WebPainter 2.0	\$69
Sportster 56K Ext.	\$209
Flo' 2.6.3	\$69
MetaFlo' 2.0.3	\$319
3D Dizzy 1.0	\$69
3D HoText 1.0	\$99
3D Words 1.0	\$69
Presenter 3D 3.6	\$995
Walkthrough Pro 2.6	\$229
Test Strip 1.1	\$89
VivoActive Producer 1.5	\$55
Art Z II 12x12 Tablet	\$399
Art Z II 6x8 Tablet	\$285
Paint Alchemy 2.0	\$79
EPS Invigator 1.5	\$249
Vector Lathe 1.0	\$119
Heads & Hair Collection	\$219

Priority Code: 3086

The
SOFTWARE
Source

1-800-831-2295

1750 Brielle Ave, Unit A-2
Ocean, NJ 07712
PHONE (732) 695-2100
FAX (732) 695-9371
E-MAIL: SFTSWS@AOL.COM

Networking Macs and PCs Leave You Stranded?

Let PC MACLAN Save You . . . Time, Money and Resources

Now whether you're a small business, home office or workgroup you can operate as efficiently as a corporate network with PC MACLAN — the leading solution for sharing printers, files, drives and more between Mac OS and Windows PCs, including remote and internet access.

- Add PCs to a Mac-based Network
- Print to AppleTalk or PostScript Printers from a PC
- Share Drives, Email and Applications Cross-platform

PC MACLAN is available for Windows NT, Windows 95 and Windows 3.x . . . and at our prices, PC MACLAN won't drown your networking budget!

www.miramarsys.com

1-800-862-2526



CIRCLE 436 ON READER SERVICE CARD

for Mac & PC **We really make sense**

Complete lines of networking products: PCI, NuBus, PC card / Card bus & PDS network cards; Transceivers, Hubs, LAN Switches; Cable testers. Internet devices: Internet Sharing Hubs, ISDN Modems & Routers. Peripherals: SCSI Terminators & Game Controllers.

PC Card



FastEthernet Hubs, Switches.....

FunPad & FunStick



FastEthernet Cards

Distributor, Reseller & Rep Welcome

Please call or email for FREE product catalog



Just Macsense Technology Inc.

Tel: 1-800-642-8860 Fax: 408-744-1060

1290 Reamwood Ave. #B Sunnyvale, CA 94089

www.macsensetech.com

800-944-4237

MEDIA SUPPLY

Quality Products, Fast Service & Great Prices!

CD-RW Media
\$17.98

CD-R Media
\$1.78

Media Supply carries quality products like Sony, Mitsui, TDK and Ricoh! Every CD-R we sell has a satisfaction guarantee!

2x/2x/6x CD-RW Drive
\$348

4x/8x CD-R Drive
\$398

Internal Drive/Includes
Adaptec CDCreator
& Adaptec Direct CD

Internal Drive/Includes
Adaptec CDCreator
& 5 Mitsui CD-Rs

Jaz Cartridge
\$78.98

Zip Cartridge
\$10.98

10 pc. minimum

10 pc. minimum

Sure our prices are great, but our service is even better!

www.mediasupply.com



610-458-9100 • Fax: 610-458-9464

CIRCLE 435 ON READER SERVICE CARD

More Serial Ports for Your Mac!

Better than a Switch or Juggler

- Provides simultaneous use of ports
- More stable than port sharing products
- Data rates up to 230 Kbps
- PCI serial cards available in 2 or 4 port versions
- For use with Comm Toolbox savvy software

Your Satisfaction is Guaranteed

- 30 day money back guarantee
- 5 year warranty
- SX-2 just \$229 SX-4 only \$329
- Free FedEx 2 day shipping

© Copyright 1997, KEYSpan is a trademark of InnoSys Inc. Other brand names are trademarks or registered trademarks of their respective holders.

Call 800-986-9146 to Order

Order from FedEx: 7am-9pm M-F (CST)

Authorization #: i35 • Source code: 25J



KEYSPAN

(510) 222-0131 www.keyspan.com

Booth 3888

SX-2 Only \$229



CD-ROM PRODUCTION

1000 Retail-Ready Stamped CDs

Includes two color discs, four color glossy insert & tray cards, jewel case, and poly wrap. Complete turnkey — just send a CD-R and art files! Call for details.



CATALOGIC

Your CD-ROM Production Source™
<http://www.catalogic.com>

935 Sierra Vista Avenue • Mountain View, CA 94043
Telephone: 650-961-4649 Fax: 650-962-5333



- Easy to use labeling kits
- CD-R silk screening service
- Short run CD-R duplication
- 4.1Gb/hour standalone duper

CD-R media as low as \$1.49

800-255-4020



COMPUTER REVELATIONS

NEW & USED BOUGHT & SOLD
CALL ABOUT MEDIA 100!

POWERMAC	
7300/180	\$1599
7300/280	CALL
8600/200/300	CALL
9600/200/300/350	CALL
7200/7600/8500/9500/	CALL
PRINTERS	
LWRITER 12/640	CALL
LWRITER 4/600	\$889
HP 6MP	CALL
HP 1600 C/PS	CALL
HP 4MV	\$2699
STYLEWRITER 1500/2500	CALL
POWERBOOK	
3400	CALL
1400	\$2299
1400C/117	CALL
1400C/133	CALL
UMAX / SUPERMAC	
S90L	CALL
S900D	CALL
SCANNERS	
VISTA/S6E SOHO	\$279
POWERLOOK II	\$1829
EXPRESSION 636	\$1389
AFGA SNAPSCAN	\$329
AFGA ARCUS II	\$1589
MONITORS	
APPLE 1705	\$695
CPD200SX	\$689
PRECISION. 21"SR	\$3299
CPD 100SX	\$379

ALL APPLE PARTS & ACCESSORIES IN STOCK

Leasing / Rentals / Supplies
Service available in NYC area

1 800 275-9924

in NY 516 737-0800

FAX 516 737-0923

331E DANTE COURT HOLBROOK NY 11741

CIRCLE 405 ON READER SERVICE CARD

FREE
Sample CD-R!
Request your sample
Mitsui Gold CD-R
online!

www.amc-direct.com/freecd

**MITSUI
GOLD**

CHECK OUT THESE GREAT DEALS!

10-disc sample pack \$19.99
100-disc case \$179.99

CALL AMC or visit our website TODAY
to find out more about these great deals!



888.558.3188
or fax: (425) 861-8391

EXPERIENCE THE AMC QUALITY DIFFERENCE.

AMC. QUALITY. INTEGRITY. EXPERIENCE.

AMC COLOR INK JET CD-R PRINTER

CALL!
For Best
Pricing!

NEW!

The CD-4004 offers all
the features of large
scale CD-R duplicators
at a fraction of the price.

Prices start at:

\$399.

PLASMON CDR480

Plasmon

The CDR480 is a quad speed
(4x) recorder + an 8x
CD-ROM reader that is
compatible with all standard
CD recording formats.

The cost effective CD
printer. Print's CD's,
Jewelcase liners and other
media in brilliant color up
to 1440dpi.

Prices start at:

\$799

AMC 2-HI JAZ/CD-R COMBO

MediaFORM CD-ROM DUPLICATOR

Prices start at:

\$2649.

MediaFORM

The ultimate CD-ROM Mastering solution.
Custom-built to your specifications with
4x8 CD-R or 4x2x6 CD-RW drives, Jaz,
Syquest and/or A/V Hard Drives. All kits
include Adaptec Toast Mastering software.



Experience the Difference.

ADVANCED MULTIMEDIA CONCEPTS

www.mwm.amc-direct.com P.O. Box 3456 Redmond, Washington 98073-3456 • 888-558-3188

Ad Code
MW03C

CIRCLE 404 ON READER SERVICE CARD

COMPUTER DISCOUNTERS

WE WILL SAVE YOU MONEY - THE TOTAL HARDWARE SOURCE!! NEW, REFURBISHED and DEMO EQUIPMENT IN STOCK.
MAC PRINTERS, COMPUTERS & POWERBOOKS IN STOCK NAME BRAND PENTIUM SYSTEMS from \$899 to \$1995

WE BUY USED/DISCOUNTED MAC HARDWARE!

MACINTOSH SPECIALS

POWERBOOKS

PB 150 8/120/Mono.....\$285
540 - 4/240/Monochrome.....\$795
100 Series PB Mercury & PC Card 14.4.....\$299
Radius Thunder PC 30/1152 & 1600.....\$199/199

68030 PROCESSOR MACS

IIcx/IIci 8/80.....\$99
IIVX 8/80-160.....\$149

68040 PROCESSOR MACS

CENTRIS 660AV 8/230.....\$299
CENTRIS 610/650.....\$259/299
QUADRA 650 8/230.....\$350
QUADRA 840AV 16/500/CD.....\$695
QUADRA 950 16/250.....\$395

POWERPC PROCESSOR MACS

PowerMac 7100/80 8/250.....\$595
PowerMac 8100/100 16/1GB/CD.....\$995

PowerMac 6100/60 16/250
w/14" Apple Monitor.....\$599

LASERWRITERS

QMS 1660E 11x17 1200 DPI.....\$1199
HP Laserjet 5MP.....\$499
HP 4MV/5M/5SIMX.....\$1695/1395/2395
Personal Laserwriter NT.....\$195
Laserwriter IINT/IINTX.....\$185/185
Laserwriter IIG.....\$299
New Toner for LWPro 810.....\$145
DEC Laser 1152 PS/2 2MB.....\$199

MONITORS

Apple M0401 & 1297/M1198.....\$99/125
Apple 16" Trinitron.....\$249
Apple 17" Multi-Trinitron.....\$375

8383 Leesburg Pike, Vienna, VA 22180
10543 Ewing Road, Beltsville, MD 20705
Tel: (301) 595-0500 Fax: (301) 595-5112

Toll Free # (800) 964-1886
www.computerdiscounters.w1.com

"Friends don't let friends use 'DOS!'"

... Buy or Sell Any Macintosh Through Us!

United Computer Exchange
800.755.3033 770.612.1205
Visit Our Online Exchange at www.uce.com

CIRCLE 429 ON READER SERVICE CARD

FAST CASH

www.mactraders.com

For ALL Macs, Memory & Peripherals — Working or not

TOP DOLLAR PAID

Mac Traders (800)990-0995
(310) 576-2466 Mon.-Fri. 9 AM-6 PM Sat. 10 AM-4 PM (P.S.T.) Fax: (310) 394-7323
1511 Lincoln Blvd. (bet. Broadway & Colorado), Santa Monica CA. 90401

HAWKE
BUSINESS SYSTEMS
A Division of the CPS Services Group
Flemington, NJ 08822

(800) 875-2610
Fax - (908) 782-7027
Email - MacHawke@AOL.COM

We Buy, Sell, Trade, and Repair Macintosh Computer Equipment

Visit Our New Web Site - www.MacHawke.com - for Full Listing

Systems	Service Parts	Peripherals
Classic 4/40 w/ K&M - \$169.00	1.4 Meg Floppy Drive - \$79.00	HP DeskWriter II - \$79.00
Classic II 4/80 w/ K&M - \$299.00	Se & Se/30 Power Sup - \$29.00	ImageWriter II - \$129.00
Se/30 8/80 w/ K&M - \$325.00	Mac II, IIfx P/S - \$39.00	LaserWriter II Nt - \$349.00
Custom Color Packages	Mac Classic P/S - \$59.00	LaserWriter IIG - \$499.00
Mac IISI Mac IICi Lc III	Apple 8 bit Video Brd - \$59.00	LaserWriter Pro630 - \$749.00
Quadra 650 Lc 475	EtherNet - Nubus RJ45 - \$39.00	Apple Portrait Mon - \$199.00
PM 6100 PM 7100 PM 7200	Mac IISI Nubus Adpt - \$49.00	Apple Hi Res Color - \$225.00
All Color Packages include Apple Color Monitor, ExtKyb & Mouse	Logic Board Exchange & Repair	Apple 15" MultiScan \$299.00
	6 Month Parts and Labor System Warranty	Apple 17" Multiscan \$499.00
		Apple 21" Color Mon - \$999.00

CIRCLE 406 ON READER SERVICE CARD

http://www.microoutlet.com

800 • 801 • 4MAC

800 • 801 • 4622

email:sales@microoutlet.com



19800 Hawthorne Boulevard
#258 TORRANCE, CA • 90503
PHONE: 310-533-0496 FAX: 310-320-4807
BUSINESS HOURS:
MONDAY-FRIDAY 7:00 AM to 7:00 PM PST
SATURDAY 10:00 AM to 2:00 PM PST



Power Mac
8600/300
32/4GB/24XCD/ZIP
\$82.00
Per Month

Power Mac
6500/300
64/6GB/CD/ZIP/MOD
\$99.00
Per Month

POWERBOOKS
63/250 32/56B/20XCD \$5299
3400C/240 16/36B/12XCD/33.6 3949
3400C/240 16/36B/12XCD 3599
3400C/200 16/26B/6XCD/33.6 2899
1400C/166 16/26B/8XCD 2149
1400CS/166 16/16B/12XCD 2150

Work Group
9650/350
64/24GB/CD/AS/Enet
\$226.00
Per Month

63/266	32/6/CD/L2/Zip	\$2799
63/233	32/4/CD/L2	1799
63/266 Desktop	32/4/CD/Zip/VRAM	2249
9600/350	64/4GB/24XCD/L2/ZIP	4395
9600/300	64/4GB/24XCD/L2/Zip	3099
9600/233	32/0GB/12XCD/KEY	2429
9600/300	32/4GB/24XCD/L2/Zip	2350
9600/250	32/4GB/24XCD/L2/Zip	2199
9600/200	32/2GB/12XCD/L2/Zip	2149

4400/200	32/2GB/12XCD/33.6/MS	\$ 1499
4400/200	16/2GB/CD/166DOS/5B	1250
7300/200	32/2GB/12XCD/L2	1499
7300/180	32/1.2GB/12XCD/L2/Dos	1999
7300/180	16/2GB/12XCD/L2	1345
6500/300	64/4GB/CD/ZIP/33.6/Home	2299
6500/275	48/6GB/CD/Sm Business	2349
6500/275-CS	32/4GB/CD/33.6/ZIP	2299
6500/225 w/ 15" SVGA MONITOR		1799

PowerBook
3400C/240
16/2GB/6XCD
\$139.00
Per Month

WORKGROUP SERVERS		
7350/180	48/4GB/12XCD/AShare	\$ 3095
9650/233	64/4GB/CD/Internet	4848
9650/233	64/24GB/12XCD	5128
9650/233	64/4GB/CD/DAT/AShare	5799
NETWORK SERVERS		
600/132	32/1GB/CD	\$ 6725
700/150	48/4GB/CD/DAT/UNIX *	9248
700/150	32/1GB/CD/UNIX *	7365
* =	Requires AIX	1289

SCANNERS
UMAX Astra1200S/Full Photoshop
\$429.00

AGFA	Arcus II Bundle	\$ 1525
AGFA	SnapScan 800	379
AGFA	SnapScan 310	225
Epson	Express. 836 Artist	899
Epson	Express. 838 Executive	739
Epson	Express. 838 Profess.	1256
H.P.	5P Mac 800 dpi LE Photo	299
La Cie	SilverScan IV Office	899
Linotype	Linocolor Jade 600 dpi	435
Microtek	Scanmaker E3	149
Microtek	Scanmaker III w/Photo	1325
Umax	Astra 1200s w/ Photo	235
Umax	Astra 1200S 600 dpi	399
Umax	Powerlook II & Trans	1230

KEYBOARDS/MODEMS

Apple	Design Keyboard	\$ 89
Apple	Extended Keyboard II	99
Generic	Extended Keyboard	89
MODEMS		
Farallon	Netopia (ISDN)	\$ 329
Global Village	Teleport 56K Fax v.34 X2	159
Global Village	Teleport 56K Fax v.34 K2	159
Global Village	PowerPort 56K PC Card	259
Global Village	PowerPort Plat 28.8 PC Card	219
Supra	Express Modem 33.6	99
Supra	ExpressFax Modem 56E v.34	129
Supra	Express 56E Speakerphone	139
U.S. Robotics	Sportster 28.8 PC Card	199
U.S. Robotics	Sportster 56K X2	159
Zoom	33.6 Int. 14.4 Fax PC Card	155

PRINTERS
Apple Color Stylewriter 6500 \$ 489
Apple Color Stylewriter 4500 349
Apple LaserWriter 12/640 1140
Alps MD1000 Micro Dry Mac/PC 369
Epson Stylus Color 800 1440dpi 369
Epson Stylus Color 800 1440dpi 259
Epson Stylus Photo 8 Color/720dpi 439
GCC Elite XL 808 800 DPI 2889
GCC Elite XL 1208 1200 DPI 5619
HP LaserJet 6MP 879
HP Color LaserJet 5M 4885

Apple LaserWriter 8500
\$2349.00

Apple Multiscan 750AV 17
\$899.00

Monitors

Apple	Multiscan 15" AV	\$ 349
Apple	AppleVision 750	799
Apple	AppleVision 750 AV	899
Apple	Multiscan 850AV 20"	1885
Hitachi	Superscan MC20	1325
Iiyama	VisionMaster Pro 21	1195
La Cie	Electron 21"	1479
Mitsubishi	Diamond Pro 91tmm	1364
NEC	Multisync M700	732
Radius	Pressview 21SR	3086
Sony	Multiscan 200SF	679
Sony	Multiscan 200SX	589
Viewsonic	Optique 7773	490

REMOVEABLE HARD DRIVES

Iomega	Zip+ 100MB & Cartridge Ext.	\$ 149
Iomega	Zip 100MB & Cartridge Int.	166
Iomega	Jaz 1GB Retail & Carl. Int.	275
Iomega	Jaz 1GB Generic & Carl. Ext.	359
Iomega	Jaz 1GB Retail & Carl. Ext.	389
Iomega	Jaz 1GB Retail & 4 Carl. Ext.	599
Syquest	EZ 230 MB & Cartridge	149
Syquest	Syjet 1.5GB & Cartridge Int.	329
Syquest	Syjet 1.5GB & Cartridge Ext.	429
Syquest	Syjet 1.5GB & Carl. House Ext.	379
Fujitsu	640 MB Dynamo Int.	389
Fujitsu	640 MB Dynamo Ext.	449
Olympus	230 MB PowerMo Ext.	349
Olympus	2.8 GB PowerMo Ext.	1899
Pinn. Micro	4.8 GB Apex Ext.	1150
VST	230MB Opt. Dr. PB 3400	435
VST	230MB Opt. Dr. PB 1400	399
VST	ZIP DRIVE Exp Bay PB 1400	315

PERIPHERALS

CACHE CARDS		
256K	L2 Dimm 8400/4400 Series	\$ 49
512K	L2 Dimm 8400/4400 Series	79
256K	L2 Dimm, 7200-8500 Series	49
512K	L2 Dimm, 7200-8500 Series	89
REMOVEABLE CARTRIDGES		
Nomai	200MB or 270MB	\$ 25
Verbatim	200MB	29
Syquest	200MB	29
Syquest EZ	135MB / 230MB	19/29
Iomega	Zip 100MB/10 Pack	16/114
Iomega	JAZ 1GB Cart/5 Pack	83/389
DRAWING TABLETS		
Wacom	Artiz II 6x8 w/Ultra Pen	\$ 281
Wacom	Artiz II 12x12 w/Ultra Pen	390
Wacom	Artiz II 12x18 w/Ultra Pen	645
Wacom	Artiz II 18x25 w/Ultra Pen	1817

VIDEO EXPANSION

Video Cards		
ATI	Exclaim 3D 4mb V-card	\$ 129
ATI	Exclaim 3D 8mb V-card	195
IMS	Twin Turbo 2mb V-card	199
IMS	Twin Turbo 4mb V-card	325
IMS	Twin Turbo 8mb V-card	485
Matrox	Millenium 4mb V-card	239
Matrox	Millenium 8mb V-card	345
Number 9	Imagine 128 8mb V-card	699
Radius	Thunder 30/1600	475
Radius	Thunder 30/1920	619
Radius	VideoVision V2.0	2249
TrueVision	Targa 1000 w/Premiere	1599
TrueVision	Targa 2000	2939
TrueVision	Targa 2000 Pro	3399
VRAM		
1MB	7300,8600,9500,9600 Series	\$ 25

EXPANSION CARDS/CAMERAS

DOS CARDS		
Apple	Pentium 166mhz	\$ 789
Apple	Pentium 100mhz	499
PROCESSOR UPGRADE CARD		
Newer Tech.	Max Power 604/450 Mhz	\$ 1099
Newer Tech.	Max Power 604/225 Mhz	775
Newer Tech.	Max Power 63/250	889
Newer Tech.	Max Power 63/275	1756
Max Power	Citation 200 Mhz 604e	339
Max Power	Citation 233 Mhz 604e	399
HiPower	PKB 500 167 Mhz	489
HiPower	PKB 500 183 Mhz	650
DIGITAL CAMERAS		
AGFA	Ephoto 307	\$ 289
Apple	Quicktake 200	399
Sony	DSC-F1 w/Flash 4mb Color LCD	589

HARD DRIVES
Quantum Stratus 4.3 GB
\$359.00

DRIVE		
Apple 2.1 GB	\$ 219	\$ 259
Quantum Stratus 2.1 GB	239	299
Quantum Stratus 3.2 GB	259	299
Quantum Stratus 4.3 GB	314	364
Quantum Stratus 6.4 GB	379	429
Quantum Atlas II 4.5 GB N	545	599
Quantum Atlas II 4.5 GB W	539	639
Seagate Barracuda 4.2 GB	379	479
Seagate Barracuda 4.5 GB N	526	589
Seagate Barracuda 4.5 GB W	549	649
Seagate ST34501N Cheetah 4.5GB	638	698
Seagate ST34501W Cheetah 4.5GB	655	755
Quantum Atlas II 9.0 GB N	849	899
Quantum Atlas II 9.0 GB W	849	949
Seagate Barracuda 9.0 GB N	758	818
Seagate Barracuda 9.0 GB W	789	889
Seagate Elite 23.0 GB N	2000	2100
Seagate Elite 23.0 GB W	2055	2155

MEMORY SALE!

4MB	72 Pin Simm	\$ 21
8MB	72 Pin Simm	34
16MB	72 Pin Simm	35
32MB	72 Pin Simm	69
16MB	Powerbook G3	55
32MB	Powerbook G3	85
64MB	Powerbook G3	250
128MB	Powerbook G3	499
8MB	Powerbook 1400 Module	58
16MB	Powerbook 1400 Module	69
24MB	Powerbook 1400 Module	99
32MB	Powerbook 1400 Module	120
8MB	Powerbook 2400c Module	45
16MB	Powerbook 2400c Module	79
32MB	Powerbook 2400c Module	145
64MB	Powerbook 2400c Module	259
16MB	Powerbook 3400c Module	75
24MB	Powerbook 3400c Module	99
32MB	Powerbook 3400c Module	118
64MB	Powerbook 3400c Module	229
128MB	Powerbook 3400c Module	229
8MB	168 Pin Dimm 60NS 3.3V	68
16MB	168 Pin Dimm 60NS 3.3V	45
32MB	168 Pin Dimm 60NS 3.3V	75
64MB	168 Pin Dimm 60NS 3.3V	145

LEASING SPECIALISTS

- Fast Approval
- Very Low Yield Rates
- Three Buyout Options
- Tax Deductible
- Business or Personal Leasing
- Ask for the Leasing Department

PowerPC
8600/300 MHz
32MB RAM / Zip
4GB HD, 24 X CD
Rastereops SuprScan 21"
Monitor
Keyboard

\$128.00
Per Month, For 36 Months

BankVest
3 Year Extended Warranty Available!

LEASE SPECIALS

Model	Configuration	Buy	Lease
9600/300	64/4GB/CD/Zip	\$ 3099	\$ 107
8600/300	32/4GB/CD/Zip	2350	82
7300/180	16/2GB/CD/Dos	1899	69
3400C/200	16/2GB/CD/33.6	2899	100
2400C/160	16/1GB/OS9	2699	94
1400C/166	16/2GB/6XCD	2199	77
1400CS/166	16/1GB/12XCD	2150	75

PowerPC
G3/250 MHz
32MB RAM
5 GB HD
20X CD
33.6 Modem

\$180.00
Per Month, For 36 Months

Due to publication time, the advertising prices may vary. All prices includes cash discounts. Not responsible for typographical errors. Shipping and service fees are non-refundable. No sales tax outside of CA. All returns subject to 15% restocking charge. All returns must have an authorization number (R.M.A.). Graphics shown do not necessarily represent actual product.



IXMICRO
TWIN TURBO
8MB \$349
4MB \$189



WESTERN
DIGITAL
2GB HARD
DISK \$199!



CUSTOM CONFIGURATIONS

a division of BASEONE computers.

LEASING PLANS AVAILABLE



AWESOME NEW LOOK AND FEATURES!

WWW.MACBASE.COM

ONLINE DETAILED SYSTEM CONFIGURATION, ADVISE MODULE, ACCURATE AND UP TO DATE PRICING, KILLER INTERFACE.

604E
8 PCI, 1MB CACHE
32 MB RAM
3 MB BAYS



POWER
PTP 200E
96/2G/24XCD
\$1799

26 DOT
1600X1200
TOP RES



POWER
COMPUTING
17" COLOR
\$499*

604E
8 PCI, 1MB CACHE
32 MB RAM
3 MB BAYS



POWER
PowerTower Pro 225
96/2G/24X/4MBVR
1MB CACHE \$1999

SONY
Trinitron
25 DOT



POWER
COMPUTING
24" COLOR
\$2799

604E
3 PCI SLOTS
UPGRADEABLE
AFFORDABLE



POWER
PCP 210LP
64/2G/16XCD
\$1499*

POWERMAC

Performa 6205/75	649*
Performa 6230/75	689*
4400/200 16/2G/8X	1249
4400/200 SMALL BUSINES	4599
4400/200 PC COMPATIBLE	1599
6500/225 32/3G/12X/MDM/HM1499	
6500/250 48/4GB/CD/ZIP/OFF	1949
6500/250 32/4G/24X/ZIP/HM	1899
6500/275 48/6G/24X/ZIP/OFF	2599
6500/275 32/6G/24X/ZIP/HM	2349
7300/180 16/2GB/CD	1349
7300/180 DOS 32M/16D/2GB	1599
7300/200 32/2GB/CD	1499
8600/250 32/4G/24XCD/ZIP	2099
8600/300 32/4GB/24XCD	2049
8600/300 32/4GB/24XCD/ZI	2299
9600/200 0/0/CD	1649
9600/200 32/4GB/CD	2299
9600/300 64/4GB/24XCD	2799
9600/300 64/4GB/24XCD/ZIP	2899
9600/350 64/4GB/24XCD/ZIP	3989
G3 DT/233 32/4G/24XCD	1829
G3 DT/266 32/4G/24X/ZIP	2199
G3 MT/266 32/6G/24X/ZIP/AV	2849
PowerWave 132/604 16/1G/CD	939*
PTP225/604e 96/2G/24XCD	1999*
PTP200/604e 96/2G/24XCD	1799*
PCP240/604e 64/2G/16XCD	2099*
PCP210/604e 64/2G/16XCD	1399*
PCP180/604e 16/2G/16XCD	1199*

POWERBOOK

DUO 2300C 8/750	Call
DUO 2400C 16/1.3G	2499
DUO DOCK II PLUS	399
1400cs/117	Call
1400cs/133 16/1.3GB/CD	1899
1400C/166 16/1GB/CD	2099
3400C/180 16/1.3GB/12XCD	2999
3400C/200 16/2GB/6XCD	2899
3400C/200 16/2G/12XCD/NOMD	2699
3400C/200 16/2G/12XCD/MDM	3099
3400C/240 16/3G/12X/NOMD	3199
3400C/240 16/3G/12XCD/MDM	3699
G3/250 32/5G/20XCD	4999
ACTION 28.8 PCMCIA	129
ACTION 33.6 PCMCIA	149
GLOBAL VILLAGE 56.6K PCMCIA	259

STORAGE

IBM 4GB HD 3.5 SCSI	369
IOMEGA JAZ DRIVE	379
IOMEGA ZIP DRIVE	149
IOMEGA ZIP DR. INT.	129
IOMEGA ZIP / JAZZ CART	12/79
EZQuest JAZ INT	299
EZQuest JAZ EXT 359	
QUANTUM 2.1GB HD 3.5 SCSI	249
QUANTUM 4.3GB HD 3.5 SCSI	399
QUANTUM 6GB HD 3.5 SCSI	459

PRINTERS

Apple SW 2200 /2500	299/Call
SW 4500/6500	349/449
Apple LW 12/640	1049
Apple LW 16/600 REF	1159
Apple LW 16/600	1459
Apple LW 8500/20 (20PPM)	2399
Apple LW COLOR 12/660	3699
EPSON STYLUS 600/800	289/389
EPSON STYLUS 1520/PROXL	789/1359
HP 870CXI / 6MP	379/899
HP 5M / 4MV	1549 / CALL
HP 4000	1579

MONITORS

Apple 15" / 15AV	299/329
Apple 720 17"	599
Apple 1710AV 17"	799
AppleVision 750 / 750AV	Call/949
Apple 850 20" / 850AV	1449/1799
NEC A500/A700/M700	329/579/759
NEC P1150 20"	1689
Sony 100GS/100SX	369/299
Sony 200SF/300 SFT	699/1389
VIEWSONIC 17PS	739
VIEWSONIC GT800	1189
VIEWSONIC P810	1399
VIEWSONIC PT770/ G810	739/1249
POWER 17 INCH REF	449
POWER 24 INCH TRINITRON!	2799

SCANNERS

AGFA ARCUS II TRANS & PHOTO	1579
STUDIOSTAR	829
STUDIOSTAR LE	719
SNAPSCAN 300 & 600	329/399
EPSON EXPRESSION 636 EXEC	749
EPSON EXPRESSION 636 ART	929
EPSON EXPRESSION 636 PRO	1299
MICROTEK SCANMAKER E3	219
MICROTEK SCANMAKER E6	299
MICROTEK SCANMAKER E6 PRO	1299
MICROTEK SCANMAKER III	1349
NIKON COOLSCAN 20E	829
NIKON SUPERCOOL SCAN	1629
UMAX ASTRA 600S	195
UMAX ASTRA 1200S	389
POWERLOOK II PRO	1349

SOFTWARE

ADOBE PHOTOSHOP 4.0	329
ADOBE ILLUSTRATOR 7.0	249
ADOBE PAGEMAKER	329
ADOBE AFTEREFFECT Production	1299
QUICKEN 7.0	29
MACROMEDIA FREEHAND	249
MACROMEDIA DIRECTOR 5.0	759
MICROSOFT OFFICE	249
QUARK EXPRESS	699
APPLE MAGIC COLLECTION CD	29

Real People, Real Product, Real Prices!
800-951-1230

Int'l (714) 428-0777 University, School, Government & Fortune 1000 P.O.'s Accepted! FAX (714) 428-0778



Dealers inquiries welcome. Returns subject to restocking fee. Prices reflect C.O.D. or CASH and are subject to change without notice. P.O.'s subject to approval.



MacGlobal

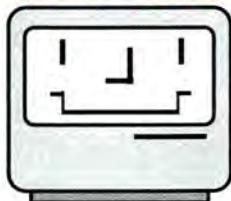
SYSTEMS AND PERIPHERALS • SALES AND SERVICE

Performas 410/466/476 Call 550 5/160 \$550 580 5/500/CD \$650 631 8/500/CD \$495 5200 8/500/CD \$900 6200 3/1G/CD \$675 PowerBooks 520 4/160 \$650 520C 12/240/19.2 \$795 540C 4/320 \$1,050 5300 8/500 \$750 5300 16/gig \$1,285 Quadrax 630 8/250 Call 650/800/840/950 Call Printers Stylw II \$145.00 Stylw 1200 \$150 Laser 300 \$299 Laser 320 \$490 Laser 4/600 Call Monitors 14" Color \$195 15" App. Multi. \$265 17" App Multi. \$450 20" Color \$650 Memory 4 MB 72-pin \$15 8 MB 72-pin \$24 16 MB 72-pin \$48 WE BUY! WE REPAIR MACS! [800] 722-8864 Phone: [408] 268-3300 Fax: [408] 997-1400	PowerBooks 520 4/160 \$650 520C 12/240/19.2 \$795 540C 4/320 \$1,050 5300 8/500 \$750 5300 16/gig \$1,285 Quadrax 630 8/250 Call 650/800/840/950 Call Printers Stylw II \$145.00 Stylw 1200 \$150 Laser 300 \$299 Laser 320 \$490 Laser 4/600 Call Monitors 14" Color \$195 15" App. Multi. \$265 17" App Multi. \$450 20" Color \$650 Memory 4 MB 72-pin \$15 8 MB 72-pin \$24 16 MB 72-pin \$48 WE BUY! WE REPAIR MACS! [800] 722-8864 Phone: [408] 268-3300 Fax: [408] 997-1400
---	---

MacGlobal

CIRCLE 415 ON READER SERVICE CARD

USED MACINTOSH!



- ★ We match buyers and sellers of used MAC equipment!
- ★ All MAC models available; SE to POWER PC.
- ★ All hardware is tested and includes a limited warranty.
- ★ Qualifying School, Gov't and Fortune 1000 POs Welcome
- ★ We also specialize in used trade-ins

The Computer Exchange

800-304-4639

www.compexch.com

Customer Service

Ph: 404-315-8518

Fax: 404-898-0304

2100 Cheshire Bridge Rd. Ste E Atlanta, GA

CIRCLE 428 ON READER SERVICE CARD

MACS & POWERBOOKS WANTED

TOP \$\$\$ PAID FAST!

Any Quantity
Trade Ups Welcome
FedEx check delivery
We Buy, Sell & Trade
New & Used Macs

(800)80-WE-BUY

Tel: (310) 966-4444 Fax: (310) 966-4433

CIRCLE 417 ON READER SERVICE CARD

MacBYTE

NO PAYMENT FOR 6 MONTHS!

BUY • SELL • TRADE

• CASH FOR MACS

• NEW & USED MACS

• WITH WARRANTIES

• FEDEX OVERNIGHT SHIPPING

Visa/Mastercard/Amex/Discover

Diners Club/COD

Local Area On-Site Consulting

800-432-2983

4223 Glencoe Ave., Suite C200

Marina del Rey, CA 90292

FAX: 310 - 448 - 4494

E-MAIL: MacByte@aol.com

CIRCLE 420 ON READER SERVICE CARD

DFI

**20 " Sony Color
BLOWOUT MODEL!**

Model GDM1960 SuperFine
Pitch Trinitron Tube .30 DP

• 1 Year Warranty
1024 x 768 Refurbished

• Tilt Swivel Base
Only **\$599!**

We also carry Sony Monitors
19" as low as \$499
17" as low as \$279

Call for Details **800-390-7020**

181 Salem Street, Malden, MA 02148



CIRCLE 409 ON READER SERVICE CARD

1-800-334-KIWI

Kiwi Computers • Save on refurbished Macs

Mac Computers

Performa 630 12/1 Gig 4xCD.....	\$449
Performa 6200/75 8/1 Gig 4xCD.....	\$599
Performa 6300/100 16/1.2 Gig 4xCD 28.8.....	\$749
Performa 6360/160 16/1.2 Gig 8xCD 28.8.....	\$875
Performa 6400/200 16/2.4 Gig 8xCD 28.8.....	\$1099
PowerMac 7100/80 8/700 2xCD.....	\$699
PowerMac 7200/120 16/1.2 Gig 4xCD.....	\$899
PowerMac 7600/120 16/1.2 Gig 4xCD.....	\$1199
Powerbook 5300cs 8/750.....	\$1049
Powerbook 5300c 16/1.1 Gig.....	\$1349

Monthly Specials

Iomega Jaz Drive External.....	\$259
32mb 72 pin SIMM.....	\$69
Apple Design Keyboard.....	\$30
Apple manual inject 1.44 floppy.....	\$49
Apple auto inject 1.44 floppy.....	\$79
Apple TV/Video card for P630, 6200, 6300.....	\$85
GV Platinum Internal 28.8 Modem for P5200 6200.....	\$59

Visa/Mastercard/American Express No Surcharge.

Refurbished products have a 90 day warranty • Returns subject to a 15% restocking fee • Prices subject to change without notice.

Toll Free: 800-334-5494 International: 310-553-4507 Fax: 310-286-9667

Hours: Mon-Fri 8am to 6pm, Sat 9am to 2pm • Better Business Bureau Member

Kiwi Computers, P.O. Box 67381, Los Angeles, CA 90067

CIRCLE 414 ON READER SERVICE CARD

Motorola Starmax

3000/200 603e Desktop 16/1.2 Gig 8xCD.....	\$749
3000/240 603e Minitor 32/2.5 Gig 8xCD.....	\$1049
4000/160 604e Desktop 16/1.2 Gig 8xCD.....	\$899
4000/200 604e Minitor 32/2.5 Gig 8xCD.....	\$1199

Upgrades

Logic board upgrade prices are with exchange.

Performa 630 series to 6300/100mhz.....	\$399
Performa 630 series to 6320/120mhz.....	\$499
Performa 6200 to 6320/120mhz.....	\$399
Performa 6200 to 6360/160mhz.....	\$499
PowerMac 7200/90 to 7600.....	\$575
PowerMac 7200/120 to 7600.....	\$499
PowerMac 8100 to 8500.....	Call
Mac Ixv to PowerMac 7100/80.....	\$499
Quadra 650 to PowerMac 7100/80.....	\$449
Quadra 610 to PowerMac 6100/60.....	\$449
Quadra 660AV to PowerMac 6100/60.....	\$399
Mac LC III to Quadra 605.....	\$235

POWERBOOK PRODUCTS

IDE PowerBook Drives

For use in PB 3400, 2400, 1400, 5200, 190, 150 & Duo 2300	
1.4 GB TOSHIBA \$ 199 ⁰⁰ 3yr	
2.1 GB TOSHIBA \$ 239 ⁰⁰ 3yr	
3.2 GB HITACHI \$ 369 ⁰⁰ 3yr	
4.0 GB IBM \$ 529 ⁰⁰ 2yr	
5.0 GB IBM \$ 599 ⁰⁰ 2yr	
8.0 GB IBM \$ CALL 3yr	

Don't Trash your old drive!

Use our PC-card IDE case and save your megabytes \$129⁰⁰

SCSI PowerBook Drives

For use in PB 300 Series, Duo 200 Series, PB140-180c (except 150)	
240 MB APPLE \$ 149 ⁰⁰ 1yr	
320 MB APPLE \$ 199 ⁰⁰ 1yr	
810 MB TOSHIBA \$ 399 ⁰⁰ 3yr	

External Drives

1.0 GB JAZ DRIVE \$ 349 ⁰⁰	
Includes 1 Cartridge, P.B. SCSI Adaptor	
1.0 GB JAZ MEDIA \$ 85 ⁰⁰	

All MCE PowerBook hard drives carry a 30 day Money Back Guarantee & ship with Torx Tool, if needed, illustrated installation manual, Anti-static wrist strap, SCSI Drives ship w/ Drive7 Utility Software.

newer tech

NUpower 500/183c (0MB) - \$ 579 ⁰⁰	
NUpower 500/183c (24MB) - \$ 759 ⁰⁰	
NUpower 500/167 (8MB) - \$ 489 ⁰⁰	
NUpower 1400/183 - \$ 479 ⁰⁰	
VIEWpower 1400 (16-bit video) - \$ 169 ⁰⁰	
MCE powerUP 500/183c Bundle	
Includes: NUpower 500/183c (24MB) PLUS	
Toshiba 810 MB 2.5" SCSI HD \$ 1099 ⁰⁰	



ADB Flexlight - Great for dark lecture halls, planes, cars or in the field \$29⁰⁰ separately

FREE
with every order!



See our complete line of PowerBook Products & Upgrades at

www.PowerBook1.com

1-800-5000-MAC • 714-458-0800 • fax 714-458-1803

30 Hughes Suite 203 • Irvine, CA • 92618

Visa / MC / AmEx / Discover / P.O.'s

Mac POWER

Sales & Service, Inc.
**BUY • SELL • TRADE
 UPGRADE • REPAIR**
 New • Used • Refurbished

- Powerbooks
- Monitors
- PowerMacs
- Printers
- Performas
- Peripherals
- Quadras
- Ram
- MacII-LC
- Parts

Call now for best prices!
888-275-POWER
 Fax: 408-448-6132
 San Jose, California, 95123

Mac Direct Intl.

14" Apple Multiscan \$250.00
 15" Apple Multiscan \$275.00
 17" Apple Multiscan \$435.00

PB: 520 8/240 \$879.00
 PB: 520c 8/240 \$995.00
 PB: 540c 8/320 \$1125.00
 PB: 5300 8/500 \$995.00

Free Shipping For Repairs
1-888-365-1925
 BUY • SELL • TRADE • REPAIR

PACIFIC

COMPUTER EXCHANGE
Used Macs Priced to Move

Cash paid for your Mac via Fed Ex!

6220/75 16/1 GIG CD/refurb.....\$899	PB 540c 8/320 19.2 modem.....\$1199	Media Vision Refurbished 2X External CD ROM \$ 69
7100/66 8/250.....\$699	Powerbook 520 / 520c.....\$899 / \$999	NEW!! 14.4 Internal Modem for Powerbook 100 Series \$ 49
6116/66 8/700 CD.....\$699	Powerbook 180 / 180c.....\$799 / \$899	
Quadra 840AV.....\$599	Powerbook 160 / 170.....\$599	
Quadra 650/660AV.....\$499	Powerbook 145 / 150.....\$499	
Quadra 700.....\$399	LaserWriter Int/ntx./lfg.....\$299 / \$399 / \$599	
Quadra 610/630.....\$429 / \$469	HP DeskWriter.....\$129	
lilci/lilx.....\$229	Apple StyleWriter 2400.....\$169	
lilsi/lilx.....\$199	ImageWriter II.....\$129	
LC/LCII/LCIII.....\$199 / \$229 / \$249	Apple 171017" Color Monitor.....\$599	
SE/SE30.....\$149 / \$299	PowerMatch 20" Color Monitor.....\$399	
Classic/ClassicII.....\$199 / \$299	NEWMultiMedia 180W Speakers.....\$39	
Color Classic.....\$399	NEW 240 W Subwoofer system.....\$79	

CIRCLE 424 ON READER SERVICE CARD

Mac OS 8 System 8.0 Complete Upgrade

\$49.99
 or Mac OS 7.6 for \$19

Mac SE 4120 w/Key & Mouse (U) 99.00
 Mac IIcx 8/160 PACKAGE 299.00
 Includes 13" Color Monitor, New HD, Keyboard, Video Card & SW1200 printer
 Mac IIci 8/80 PACKAGE 399.00
 Includes 13" Color Monitor, New HD, Keyboard and Personal LaserWriter I.S.
 Mac IIci 0/0 99.00 Mac Plus 0/0 19.00
 Mac IIcx 0/0 69.00 Mac IIx 0/0 69.00

28.8 bps modem External *NEW*

\$49
 Includes Cables

12X CDROM SCSI

\$99
 *external \$129

PowerBase 180 (R)

16/1.2GB/16x
\$899

PowerBase 180 16/2GB/16x \$999

*** INCLUDES Mac OS 8.0 ***

PowerBase 200 (R) 16/1.2GB/16x \$999

PowerComputing 120Mhz from \$399 with PowerBase Purchase \$99

64MB \$99

We accept: School & Gov't POs

Hewlett-Packard 5MP (R)

6ppm, 600dpi includes Toner **\$499**

17" RGB Trinitron Mtr (R) 249.00
 20" Color Monitors (U) from 399.00
 Apple 17" MultiScan Mtr (U) 399.00
 Apple 15" MultiScan Mtr (U) 229.00
 Apple 14" MultiScan Mtr (U) 179.00
 Apple 14" RGB Trinitron Mtr (U) 199.00
 Apple 13" RGB Trinitron Mtr (U) 179.00
 ADB Mouse, Single Button, Mac (N) 16.50
 Apple StyleWriter 1200 B/W (R) 89.00
 Epson Stylus 600, 1440 dpi Color (N) 269.00
 Epson Stylus 800, 1440 dpi Color (N) 379.00
 Apple LaserWriter IIxt w/Toner (U) 399.00
 Apple LaserWriter IIg w/Toner (U) 399.00
 Apple Personal LaserWriter LS (U) 129.00

800-673-6227
 PowerON computer services • 4323 Anthony Ct. #1 • Rocklin, CA 95677
 (916) 652-1880 • (916) 652-1881 FAX
 Mon.-Sat. 10a-5p PST

CIRCLE 413 ON READER SERVICE CARD

does your computer HUNGER for more DATA STORAGE?

NEW 2GB!

CD-Recorders

AVD Panasonic 4X/8X CD Recorder
 int: **\$479** ext: **\$529**

Other AVD Kits
 Sony 2X/6X **\$349** **\$399**
 Ricoh 2X/6X CD-R/Writable **\$449** **\$499**
 Yamaha 4X/2X/6X CDRW **\$499** **\$599**

Recorder Duos

Extreme Sony 2X/6X CDR & your choice of Jaz drive or SyJet drive in one unit! **\$749**

Other Extremes
 Panasonic 4X/8X + JAZ or SyJET **\$999**
 Ricoh 2X/6X CD-R/Writable + JAZ or SyJET **\$949**
 Yamaha 4X/2X/6X CDRW + JAZ or SyJET **\$1099**

CD-R Blanks

Mitsui GOLD, TDK GREEN & Verbatim Blue, Printable, Spindle, CD-RW too!
 As Low As **\$1.99**

CD Duplication

Multidrive Duplication Systems
 Mediastore Easy CD-2-CD Duplicator **\$999**
 MediaFORM CD-2-CD Duplicator **\$2699**
 MediaFORM 4600 6-CDR Duplicator **\$6999**

Autoloader Duplication Systems
 MediaFORM 50-CD Duplicator **\$5999**
 Champion 50-CD Duplicator **\$5999**
 < Champion 150-CD Duplicator **\$6999**

CD Labeling

Pilasso CD COLOR PRINTER
 Includes 10 free pieces of printable CDR media! **\$1199**

CD Stomper Labeling Kit: **\$59**

Ad Code: BB-103

ORDER TOLL FREE! 800.555.5551
 open M-F: 7 a.m. - 6 p.m. (PST) • intl ph. 714-974-5551 • fax. 714-279-1690

Product Prices and Availability Subject to Change

MEDIASTORE
 www.mediastore.com



THE GOOD, THE BETTER

VISIT US ON THE NET AT www.applemacnet.com

- 1-CONSULT UPDATED PRICES! 2-ONLINE CATALOG, OFFERS & ORDERING 3-CREDIT CARDS, C.O.D., P.O. & LEASING
4-CUSTOMER SERVICE 5-WORLDWIDE SHIPPING ON THE FLY 6-SCHOOLS, UNIVERS. & US GOVERN. WELCOME

NEW G3 SERIES

G3-233MHz/32MB/4GB/24XCD.....	\$1,859.00
G3-266MHz/32MB/4GB/24XCD/Zip Drive/Desktop.....	\$2,199.00
G3-266MHz/32MB/6GB/24XCD/Zip Drive/AV card(Minitower).....	\$2,799.00
Power Macs	
7300 200MHz/16MB/2GB/12XCD.....	\$1,499.00
7300PC 200MHz/16MB/2.0GB/8xCD.....	\$2,299.00
*8600 300MHz/64MB/4GB/Zip Drive/24XCD.....	\$2,299.00
*9600 300MHz/64MB/4GB/24XCD.....	Call

*after manufacturer's rebate!

Power Mac 6500 series	
6500 225MHz/32MB/3GB/12XCD/33.6Mdm.....	\$1,399.00
6500 250MHz/32MB/4GB/12XCD/56kMdm/Zip drive.....	Call
6500 250MHz/48MB/4GB/12XCD/56kMdm/Zip(Office).....	\$1,999.00
6500 275MHz/32MB/4GB/12XCD/56kModem/Avid cinema/.....	\$2,099.00
6500 300MHz/64MB/4GB/12XCD/56kMdm/Zip drive.....	\$2,199.00

PowerBooks	
G3-250MHz/32MB/5GB/20XCD/33.6 enh. moderm.....	\$5,299
1400c *133MHz/16MB/2GB/8XCD/128 k L2.....	Call
1400c *166MHz/16MB/2GB/8XCD/128 k L2.....	Call
2400c *180MHz/16MB/2GB/8XCD/128 k L2.....	Call
3400c *200MHz/16MB/2GB/12XCD/33.6 moderm.....	Call
3400c *240MHz/16MB/3GB/12XCD/33.6 moderm.....	Call

Message Pad 2000 • 162MHz 5MB/8MB ROM/4MB Flash RAM.....	\$799
Message Pad 2100 • 162MHz 8MB/8MB ROM/4MB Flash RAM.....	\$899

Apple Servers

Call for latest prices

	Applic. Solution	¥ Internet Solution	1-Apple Share Solution
7250 120MHz/16MB/2GB/8XCD.....	\$1,199.00	\$1,499.00	
7350 180MHz/48MB/4GB/12XCD.....	\$N/A	\$2,499.00	\$2,999.00
9650 350MHz/64MB/8GB/24XCD.....	\$6,299.00	\$6,699.00	\$6,999.00

1-AppleShare IP 5.0 advanced server soft. that enables you to incorporate a server into an Intranet easily to take full advantage of Internet technology & more

UMAX COMPUTERS

200 **\$900/200**
32MB/CD/33.6 Modem
ONLY \$1,899

UMAX SUPER DEAL!
CALL FOR OTHER MODELS UPDATED PRICES.
*After manufacturer's rebate!

Graphic Tablets

4" X 5" Art Pad
\$129

Art Z II 6"X8"	299.00
Art Z II 12"X12"	399.00
Art Z II 12"X18"	659.00
Art Z II 18"X25"	1,699.00
Ultra Pen.....	65.00
4-button puck.....	38.00

Digital Cameras

RICOH RDC-300
•4MB memory/38mm lens
•Stores up to 100 images
•640X480
•NTSC-Out
•Auto
•Flash
\$439

Kodak
DC-120 (1280X960).....699.00
DC-210 (1152X864).....849.00

Minolta
RD-175 (1528X1146/lens).....5,399.00

Olympus
D-320L (1024X768).....659.00

Polaroid
PDC-2000 (1600X1200).....2,699.00

Memory Super Hot Deal

32MB RAM \$75
SIMMS

SIMMS	DIMMS
16MB \$37	16MB \$38
32MB \$75	32MB \$79
64MB \$159	64MB \$149
also SDRAM for G3:	128MB \$399
32MB \$89	
64MB \$189	
128MB \$399	

Monitors

Apple Multiscan 15AV 15".....	\$369.00
Multiscan 750.....	\$779.00
Multiscan 750AV.....	\$869.00
Multiscan 850 20".....	\$1,499.00
Multiscan 850AV 20".....	\$1,759.00

Sony 17" 200SX \$589

Sony 100SX 15".....	\$339.00
100SF 15".....	\$369.00
200SX 17".....	\$589.00
200SF 17".....	\$669.00
300SF 20".....	\$1,299.00
SE2 20".....	\$1,699.00

Viewsonic E655 15".....	\$289.00
15GS 15" (Graphic Series).....	\$339.00
17EA 17".....	\$513.00
17GS 17" (Graphic Series).....	\$569.00
G800 20" (Graphic series).....	\$999.00

Printers

Epson Stylus 800

\$369

Apple Color Stylewriter 1500.....	\$159.00
Laserwriter 4/600.....	\$679.00
Laserwriter 12/640.....	\$1,099.00
Epson Stylus Photo.....	\$449.00
Stylus Color 600.....	\$265.00
Stylus Color 800.....	\$369.00
Stylus Color 1520.....	\$729.00
Stylus Color PRO XL (last 10).....	\$999.00
Stylus 3000 (no postscript).....	\$1,599.00
HP DeskJet 340c.....	\$269.00
LaserJet 6MP.....	\$799.00
LaserJet 5M (6MB).....	\$1,499.00

Scanners

Agfa SnapScan 300

\$269

Agfa SnapScan 310.....	\$199.00
SnapScan 600.....	\$379.00
StudioStar (Photoshop full).....	\$749.00
StudioStar (Photoshop LE).....	\$699.00
Arcus II w/transp. adapter.....	\$1,299.00
Agfa DuoScan (spec. conf.).....	\$3,399.00

Epson Expression 636 Artist.....	\$979.00
Expression 636 Professional.....	\$1,299.00
Expression 836 XL (12X17).....	\$2,299.00
836 XL transparency adap.....	\$499.00

Umax Astra 610

Only \$159

Umax Astra 1200S.....	\$259.00
Astra Transp. Adapter.....	\$179.00
Power Look II (Photoshop).....	\$1,299.00

MICROTEK

Better Images Through Innovation.

ScanMaker V300

BEST BUY **PRICE**
Only \$129

24-bit color depth
Single-pass speed
300x600 dpi optical resolution
ScanWizard™ scanner controller soft.
Image-adaption software/OCR software

35T 35MM Slide.....	\$669.00
ScanMaker E6.....	\$279.00
ScanMaker III.....	\$1,299.00

Modems

Supra 33.6

PRICE **\$69**

Apple Video Phone.....	\$259.00
Farallon Netopia™ 412 ISDN Modem.....	\$299.00
Netopia™ 440 Internet Router.....	\$799.00
Global Village	
56Kbps Teleport K56 Flex ext.....	\$149.00
56Kbps Teleport K56 X2 ext.....	\$149.00
56Kbps PC card K56 flex.....	\$279.00
56Kbps PC card Ethernet.....	\$359.00
Supra	
VSupra Express 56e.....	\$135.00
VSupra Express 56e SP.....	\$145.00
U.S. Robotics/3COM	
VSportster 56k(2X tech.).....	\$139.00
VSportster 56k(2X tech.) Voice.....	\$149.00
33.6 k PC Card uppg. to 56k.....	\$179.00
ISDN 128Kbps PC Card.....	\$499.00

*After manufacturer's rebate!

Digital Video

Photo DV™ & Moto DV™
Starting at \$95

FireWire Technology
•Video capture in real-time, full-motion or still-video, edit, add effects and save back to tape w/ no loss!
Y Camcorder not included! *MotoDV™ upgrade!
•Radius Moto DV w/ FireWire Card Full-Motion Video Capture.....\$439.00
•Radius Photo DV Still-Image Video Capture.....\$439.00

Media/Storage

PRICE **\$129**

Zip drive w/ 1 cartridge.....	\$129
Zip 100MB cart. (10-pack).....	\$125
Zip Plus drive(6 soft. pack).....	\$195
100MB Zip cartridge.....	\$13

Jaz Drive 1GB

PRICE **\$369**

Jaz Drive w/ 1 cartridge.....	\$369
1GB Jaz Cartridge.....	\$77
2GB Jaz Drive.....	\$589
2GB Jaz Cartridge.....	\$129
JAZ & CD-RECORDER DUO Jaz Drive & LaCie 2X/6X CD-R.....	\$799
SYJET & CD-RECORDER DUO SyJet 1.5G & LaCie 2X/6X CD-R.....	\$799

CALL 1-800-404-9976



Schools & Corp. P.O.s are Welcome

Customer Service Toll-free number: 1-800-743-2998

MacNet is not responsible for typos!

ALL PRICES ARE CASH DISCOUNTED. Prices & product availability subject to change without notice - Any merchandise returned is subject to a restocking fee! When returning, call for a RMA# first! Thank You!

AND THE BEST DEALS ARE HERE!

Software

Business

Microsoft Office 4.2.1
Full version

\$299.

Microsoft
Microsoft Office 4.2.1 (full version).....\$299.
Office 4.2.1 (upgrade).....\$199.
Microsoft Word 6.0.1 (full version).....\$269.
Microsoft Excel 5.0 (full version).....\$269.
Microsoft Excel 5.0 (upgrade).....\$119.

Design / Graphics

Adobe Photoshop 4.0
Upgrade

\$129.

Adobe Systems
PageMaker 6.5 (full version).....\$389.
PageMaker 6.5 (upgrade).....\$89.
Photoshop 4.0 (full version).....\$399.
Photoshop 4.0 (upgrade).....\$129.
Illustrator 7.0 (full version).....\$299.
Illustrator 7.0 (upgrade).....\$109.
FrameMaker 5 (full version).....\$479.
Streamline 4.0 (full version).....\$129.

FREE HAND GRAPHIC STUDIO 7 Upgrade

Full version \$249 **\$189.**

Fractal Design
Detailer (Paints 3D models).....\$289.
Expression 1.0 (object-oriented drawing).....\$289.
Painter 5.0 (full version).....\$259.
Painter 5.0 (upgrade).....\$89.
Poser2.0 (human-models in 3D enviro).....\$129.
ImageXpress
ScanPrepPro 3.1 (automates image-process).....\$639.
Macromedia
Director 6 multimedia studio (full version).....\$899.
Director 6 multimedia studio (upgrade).....\$459.
Director 6 (upgrade).....\$369.
Free Hand V7.0 (full version).....\$199.
Free Hand V7.0 (upgrade).....\$135.
SoundEdit 16.2 (full version).....\$269.
NewTek
LightWave 3D (Pro-Level animation).....\$1399.
Quark
QuarkXpress Passport (multi-language).....\$1,199.
QuarkXpress 4.0 (publishing+Web).....\$675.

Adobe Illustrator 7.0 Upgrade

\$99.

Strata

Strata Studio Pro 2.1 (3D/animat).....\$899.
Strata Studio Pro 2.1 (upgrade).....\$289.
MediaPaint (profess. painting tool).....\$299.
VideoShop (drag and drop clip making).....\$199.
Vision 3D (integ. 3D soft. pack).....\$209.

Quark Xpress 4.0

Best price on the market **Only \$675.**
V4.0

Database/Utilities

Claris
FileMaker Pro 4.0 (FullVersion).....\$189.
FileMaker Pro 4.0 (upgrade).....\$95.
Claris Home Page.....\$94.
Claris Works Office.....\$94.
Claris E-Mailer 2.0 (e-mail manager).....\$39.
Symantec
Symantec Visual café.....\$194.
Symantec Visual Page.....\$94.
Caere
Omni Page Pro 7 (OCR soft. pack).....\$439.
Connectix
Speed doubler 2.0.1. (file transfer utility).....\$89.
RAM doubler 2.0.1. (Doubles your RAM).....\$89.
Datawatch
Virex 5.7 (great features in virus-detection).....\$67.
Symantec
SAM 4.5 (virus protection).....\$49.*

Effects/Plug-ins/Media

After Effects 3.1

•Broadcast multimedia and Film production Tool!

\$389.

Adobe
After Effects 3.1 (full version).....\$389.
Premiere 4.2 (full version).....\$399.
Persuasion 4.0 (full version).....\$299.

Arel Software
Boris Effects 3.0 (Adobe plug-in).....\$449.

DigiEffects
Aurorix 2.0 (full version).....\$249.
Berserk 1.3 (full version).....\$249.
Cyclonix 1.0 (particle-generation soft).....\$429.

Knoll soft.
Lens Flare Pack 1.5 (after effects plug-in).....\$139.

MetaTools
Bryce 2.....\$159.

Final Effects AP 1.0 (particle-generation).....\$189.
KPT Final Effects 3.0.1 (effects collection).....\$659.
Studio Effects 1.0 (3D particle-generator).....\$659.

M.M.M. Soft.
HoloDaz 1.0 (Adobe Premiere plug-in).....\$129.

Terran int.
Media Cleaner Pro 2.0.1 (movie comp. tool).....\$279.

The Valis Group
Movie Flow 2.0.2. (image distortion soft).....\$629.

Scanner UMAX Powerlook 2000

\$2,499

Also: Powerlook III (720X486).....\$3,299.00

Printer Stylus 3000

Up to 17"x22"

The Ultimate Full Bleed, High Performance Color Comping Device **\$1,599**

Also: Stylus 3000 W/ postscript option.....\$1,699.00

CD-R LACIE 2X/6X

\$369

For large file transfers, media, (sound image) or mass distribution of CD-R provides the least expensive solution! Comes w/ Toast Pro software.

4x/6x CDR.....\$549.00
2X/6XCD-REWRITABLE.....\$659.00

inFOCUS PowerView 820

Ultra light weight Super mobile presentation solution. Only 4.2lb. Room-filling audio and the best video in a portable panel

\$2,999

Also: PowerView 950.....Call
LightPro Multimedia Projector Series.....Call

Scanner AGFA DUOSCAN

\$3,399

Bundled w/ ColorTune full CD version and FotoLook 3.0
Optical Res. of 2000(v)x2000(h)ppi
4000 ppi interpolated
36 bit color
Scan speed 17sec.
ARCUS II W/ TRANSPARENCY.....\$1,299.00

Printer XANTE Accel-a-Graphix

\$5,499

CONTROL TOWER CT4-1 bundled w/ colortron II

CHROMA 24".....\$2,599.00
NOVAJET™4.....\$6,699.00
PRO 36".....\$8,999.00
PRO 50".....\$15,299.00
PROe 42".....\$15,999.00

Removable IOMEGA JAZZ DRIVE

Easy to Use

2GB Jaz Drive \$589

Fast and reliable Portable & compact
An ideal solution for multimedia Backup answer to large systems
Also: 2GB cartridge.....\$129

TRUEVISION TARGA 2000

\$2,699

Also: Targa 2000 Pro (720X486).....\$3,499.00
Targa 1000 (640X480).....\$1,559.00
Targa 1000 Pro (720X486).....\$2,099.00

Scanner EPSON 836-XL

\$2,299

36-bit color/12-bit grayscale/Color CCD
3.3 dynamic range/full tonal range
Only 10sec.for 12"x17" preview
836XL TRANSPARENCY ADAPT.....\$499.00

Printer ELITE XL1208

Supersize for Graphics and Pre-Press

\$3,299

ELITE XL 1208 PLATEMAKER.....\$4,299.00
ELITE XL 608.....\$1,999.00

Video Editing radius EDIT DV

EditDV \$959

•100% non-linear editing
•Compositing
•Animation
•Special Efx
•All in One Digital Video production solution

•Comes w/ MotoDV™ capture soft.
•NTSC & Quick Time compliant. FOR ONLY.....\$959

Video Editing miroMOTION DC30

\$699

•Bus-Mastering & Int. audio capture
•Up to 7MB/s transfer rate-MJPEG
•720X480 - 60fields/second
•Provides studio-quality output

TRADE YOUR MAC FOR A NEW ONE. We Pay Top \$\$\$ For Your Mac & Mem.

Competitive Leasing
Email: cgn@cgnusa.com

BUY-SELL-TRADE We custom configure and test your system.

PowerMacs

G3 266 Mhz/32/6gb/CD	2750
G3 233 Mhz/32/4gb/CD	1750
9600 350 Mhz	4199
9600 300 Mhz	2840
8600 300 32-4Gb-CD	2390
7300 180 Mhz	1299
8500 132 Mhz	1450

Call for G3 New Sys.

4400 200Mhz	1095
7200 75/90/120	CALL
Call for config. not listed	

Powerbooks

3400C 240 Mhz	3195
3400C 200Mhz	2790
3400C 180 Mhz	2550
1400C 16-1Gb-CD	2190
2400cs 12/750	2545

Call for New PB 3400

Demo Powerbooks

PB 180c Color	745
540C 12/320/Mod	999
5300c 16/750	1299
145 - 170 - 180c-165c	CALL
5300C 16/500 Actv	1290

Upgrades

Same day Upgrade No down Time!!	
Prf 63X to 6300 603-100Mhz	490
7200 to 7600	525
8100 to 8500	850
7500 to 604-200/233	275/379
Call for PowerBook Upgrade	
Q800- Q840 to 8500	825
7100 to 7500/100	599
7200 to 7500/100	425
Q800-840 to 8100	490
PB 5300 to 3400/CD	Call
Call for Upgrades not listed	

Demo Macs

8500 120/132 1299/1450	
7500 /7600 990/1195	
9500 1450	
8100/100 16/1GB/CD	970
Q 800/ 840/950 450/550	
7100/80 650	
15" / 17" Monitor 250 / 420	
Mac Ilci 99	

Performa

6400- 16/1Gb CD	1090
Call for latest prices.	
6320/6400/4400/6500	

Memory

Dimms 16/32/64	45 /79/170
30 Pin 1/ 4/16	8 / 13/ 55
72 Pin 8/16/32	32 /45 /75
2X - 4X-8X CD	50 /85/120
HD 1.GB - 2.GB-4GB	Call
lomega JAZZ Drive	299
Global Village Modem	169

Call For:

Monitors, Printers, Scanners.
All Apple Parts In Stock and
We do Advance exchange.
Leasing Available.

Parts

Floppy 1.44	75
POWER SUPPLIES	CALL
AV Card	\$175
Power supply Cx Ci 7100	45
Call for Logic Boards & more	

Computer Graphics & Networking

All prices Reflect cash Discount
Visa, Mastercard, Amex Accepted
<< Prices are subject to Change.>>

TEL: 310-441-4771 10922 W. Pico Blvd. Los Angeles, CA 90064 Fax: 310-441-4770

"Custom Configuration Specialists"

- Dealers & International sales welcome!
- Govt., University & Corporate P.O.'s Welcome!
- Best Prices, Service & Delivery.

Web Site @ www.infinity-micro.com

One stop shopping for all your software & hardware needs!

800-589-1234

TEL 310-470-9426 FAX 310-470-4956

"We Match, We beat, We deal." CALL US LAST!!

Apple 14" 15" Multiscan \$249/\$299. StyleWriter II \$179.

Apple 15" AV Multiscan \$345. StyleWriter 1200/1500 \$99/129.

Apple 17" Multiscan \$595. StyleWriter 2200 \$389.

Apple 1705/1710 \$495/\$695. StyleWriter 4100 Color \$239.

Apple Vision 750 \$795. StyleWriter 6500 Color \$339.

Apple Vision 750AV \$895. LaserWriter 12/640 \$469.

Apple Vision 850 20" \$1445. LaserWriter 4/600 \$695.

Apple Vision 850AV 20" \$1795. LaserWriter 12/600 \$1095.

Apple 20" Multiscan \$995. LaserWriter 8500 \$1689.

Magnavox 20" Color \$595. LaserWriter Color 12/660New \$2495.

Radius PrecisionView 21" \$1695. LaserWriter Color 12/660Demo \$2995.

Radius PressView 17SR \$1595. Epson Stylus 600 \$279.

Radius PressView 21SR \$2895. Epson Stylus 800 \$419.

RasterOps MC20 20" 28 \$1345. Epson Stylus 1520 \$795.

RasterOps MC-801 21" \$1595. Epson Stylus 3000 Color \$1679.

RasterOps MC-801HR \$1695. Fargo Pictura 310 \$2395.

RasterOps M7515 19" \$1095. Fargo Pictura 310Ethernet \$2295.

SuperMac 21" Color \$895. Gcc Elite XL-1212 Laser \$1089.

Sony 100ES/100GS \$349/\$379. Gcc Elite XL-608 \$2089.

Sony 200ES/200GS \$629/\$689. Gcc Elite XL-616 \$2345.

Sony 200PS/400PS \$845/\$1195. Gcc Elite XL-808 \$2699.

Sony 300SF/500PS \$1345/\$675. Gcc Elite XL-1208 \$3895.

ViewSonic 17GA/17PS \$549/\$595. HP Deskjet 8700C \$389.

ViewSonic EA771/6771 \$579/\$495. HP Deskjet 1600CM \$1585.

ViewSonic GT770/P775 \$595/\$595. HP LaserJet 5MP \$595.

ViewSonic G790 19" \$895. HP LaserJet 6MP \$875.

ViewSonic G810 21" \$1195. HP LaserJet 4MP \$595.

ViewSonic P810 21" \$1245. HP LaserJet 5M \$345.

ViewSonic P815 21" \$1425. HP LaserJet 5SIMX \$3395.

ViewSonic P810 21" \$1345.

Optquest Q41 14" \$195.

Optquest Q53 15" \$289.

Optquest Q71 17" \$475.

Optquest V641 14" \$229.

Optquest V773 17" \$529.

Optquest V775 17" \$549.

Optquest V95 19" \$875.

PowerMac 16MB Dimms \$69.

PowerMac 32MB Dimms \$89.

PowerMac 64MB Dimms \$175.

PowerBook 16MB 3400 \$95.

PowerBook 32MB 3400 \$149.

PowerBook 64MB 3400 \$249.

GT memory products in stock call.

GE 3 YEAR ON-SITE WARRANTY

\$135.95 \$165.95 \$189.95 \$219.95 \$249.95

Over 2700 products to choose from!!

HP LASER 5MP 600DPI, POSTSCRIPT LVL2 \$599.

To order product please call:

TEL: 800-589-1234

CIRCLE 412 ON READER SERVICE CARD

164 March 1998 MACWORLD

1800-533-9005**E-MAIL US AT: COMPAMER@aol.com**

(310) 446-1771 10435 Santa

FAX Bids Monica Blvd

(310) 475-7744 LA, CA 90025

We are open on Saturday!

COMPU AMERICA

"The Computer Specialist"

Check out our WEB!!!

- **UPDATED DAILY!!!**
- **Online Ordering**
- **Stock/Availability**
- **Color Photos**
- **Complete Specs**
- **Shipping Estimates**
- **International Sales**
- **Credit/COD/Leasing**
- **No Wait! No hold!**
- **Completely Accurate!**

HTTP://WWW.COMPU-AMERICA.COM

Government, University, and Fortune 1000 P.O.'s are welcome! International Orders Please call (310) 446-1771

CALL OUR LEASING DEPARTMENT TODAY!

PowerBook 3400C/240

SPECIAL!

240MHz 603e
16MRAM/3G/12XCD
ACTIVE/ETHERNET
\$2999

PowerBook 3400C/200

SPECIAL!

200MHz 603e
16/2GIG/12XCD
ACTIVE/ETHERNET
\$2299

PowerBook 1400C/166

SPECIAL!

166MHz 603e
16/2G/8XCD
\$1999

LaserWriter 12/640PS

SPECIAL!

30MHZ/8M RAM
600DPI/12PPM
\$989

PowerMac 7300/200

SPECIAL!

200MHz 603e Desktop
32MRAM/2G/CD
256K CACHE, KEYBOARD
\$1399

PowerMac 8600/300

SPECIAL!

300MHz 604e Mini
32/4GIG/24XCD
2MB VRAM, KEYBOARD
\$2199

Power Mac G3/233MHZ

SPECIAL!

G3/233MHZ
32/4G/24XCD
\$1699

Power Mac G3/266MHZ

SPECIAL!

G3/266MHZ
32/6G/CD/ZIP
\$2599

NEW G3 POWERMACS!

G3/266MHZ 32/6G/24CD/ZIP 2599
G3/266MHZ 32/4G/24CD/ZIP 2099
G3/233MHZ 32/4G/24XCD 1699

NEW POWERMACS!

9600/350 64/4G/24X/ZIP 3899
9600/300 64/4G/24X 2599
9600/200MP32/4GIG/CD 2799
9600/233 32/4GIG/CD 2299
9600/200 32/4GIG/CD 2099
9600/200 0/0/CD 1399
8600/300 32/4G/24X 2199
8600/250 32/4G/24X 2099
7300/200 32/2GIG/CD 1599
7300/200 32/4GIG/CD 1399
7300/180 16/2GIG/CD 1299
6500/300 32/4G/CD 1999
6500/275 64/4G/CD/ZIP 1999
6500/250 48/4G/CD/OFF 1799
6500/250 32/4G/CD/ZIP 1699
6500/225 32/3G/CD 1399
4400/200 16/2G/CD/KEY 999*
4400/200 32/2G/CD/PEN 1399
8500/150 16/2G/8XCD CALL

Apple Printers

SW 2200 299
SW 2500 229
SW 4100 239
SW 4500 339
SW 6500 CALL
Apple LW 8500 CALL
Apple LW 12/640/PS 989
Apple LW 16/600PS 1299/999*
Apple LW 12/660PSC 3499

APPLE Monitors

Apple MS 15" 279
Apple MS 15AV 319
Apple 1705 17" 469
Apple 750 699
Apple 750 AV 879
Apple Multiscan 850 20" 1399
Apple Multiscan 850AV 1799

SONY

Sony 100ES/100GS 329/369
Sony 200ES/200GS 589/639
Sony 200PS 17" 789
SONY 400PS 19" 1099
SONY 300SF 20" 1089
SONY 500PS 21" 1599

NEW G3 POWERBOOKS

G3/250MZ 32/5G/20CD/ETH 4499

POWERBOOKS

3400C/240 16/3G/12XCD/M 3299
3400C/200 16/3G/12XCD 2999
3400C/200 16/2G/12XCD/M 2599
3400C/200 16/2G/12XCD 2299
3400C/180 16/1.2G/12XCD 2799
3400C/180 16/1.3G 2699
2400C/180 16/1.3G 2499
1400C/166 16/2G/CD 1999
1400CS/166 16/2G/CD 1799
1400CS/133 16/1G/CD 1699
5300C/100 8/500 1195*
5300CS/100 8/750 1099*
DUO 2300C 20/1.2GB/14.4 1399*
DUO 2300C 8/750/14.4 999*
DUO DOCK 429

PERFORMAS

6400/200V 16/2.4G/CD CALL
6400/200 16/2.4GIG/CD CALL
6400/180 16/1GIG/CD CALL
6360/160 16/1.2G/8XCD CALL

WorkGroup Servers

7350/180 48/4G/CD/SHA 2999
7350/180 48/4G/CD/INT 2999
7350/180 48/4G/CD 2599
9650/233 64/4G/CD/SHA 5799
9650/233 64/4G/CD/INTER 4999
9650/233 64/4G/CD/DAT 5099

SOFTWARE SPECIALS

ADOBE PHOTOSHOP 329
ADOBE PREMIER 349
ADOBE ILLUSTRATOR 249
ADOBE PAGEMAKER 329
MACROMEDIA FREEHAND 249
MICROSOFT ACCESS 199
MICROSOFT WORD 179
MICROSOFT EXCEL 179
MICROSOFT POWERPOINT 179
MICROSOFT OFFICE 249
QUARK XPRESS 639

GLOBAL VILLAGE COMMUNICATION

Global Village Plat 56k 149
Global Village Gold II PCM 14.4 49
Global Village Gold II 14.4EXT 49
Global Village 56.6 PCMCIA 249
Global Village 56.6 ETH/PCM 349

UMAX

VISTA Astra 600-LE 149
VISTA Astra 1200-LE 269
VISTA Astra 1200-PRO 449
POWERLOOK III CALL
POWERLOOK 3000 CALL
MIRAGE IISE W/TRANS 3699



DIMAGE V 595
DIMAGE SCAN 694
QUICKSCAN 35 CALL

AGFA

SNAPSCAN 310 199
SNAPSCAN 600 529
SNAPSCAN 600 ART LINE 389
STUDIO STAR 799
ARCUS II 1499
EPHOTO 1208 CALL

WACOM

ARTZ II 4 X 5 139
ARTZ II 6 X 8 289
ARTZ II 12 X 12 389
ARTZ II 12 X 18 669

**HEWLETT
PACKARD**

5SIMX 3499
4000N CALL
5MP 549*
6MP 849
4MV 2399
Deskjet 690C CALL
Deskjet 890CXI CALL

radius

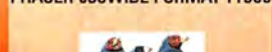
PRESSVIEW 21SR 2999
PRESSVIEW 17SR 1699
PRECISION VIEW 21" 1699
Thunder Power 30/1600 599
Thunder Power 30/1920 849
Thunder 3D 1600 x1200 1699
VIDEO VISION STUDIO 2.0 CALL

Processor Upgrades

APPLE POWERMAC 132MHZ 99
APPLE POWERMAC 150 MHZ 149
APPLE POWERMAC 200MHZ 269
APPLE POWERMAC 233MHZ 299

Tektronix

PHASER 140 949
PHASER 300X 4999
PHASER 350 COLOR LASER 2999
PHASER 380 7899
PHASER 450 6099
PHASER 480X 14495
PHASER 550 COLOR LASER 3999
PHASER 600WIDE FORMAT 11999



VIEWSONIC 15GA 369
VIEWSONIC 17GA 539
VIEWSONIC G771 17" 529
VIEWSONIC G773 17" 539
VIEWSONIC G775 609
VIEWSONIC G790 849
VIEWSONIC G800 999
VIEWSONIC G810 1179
VIEWSONIC Z9GA 2199
VIEWSONIC P775 649
VIEWSONIC P7775 699
VIEWSONIC P810 1279
VIEWSONIC P815 1399
VIEWSONIC P813 1379
VIEWSONIC OPTIQUEST V775 549
VIEWSONIC OPTIQUEST Q100 969
VIEWSONIC VWPAN VPA138 2199
VIEWSONIC VWPAN VPA150 2499
VIEWSONIC P800 4299
VIEWSONIC PJL802 VIEWBK CALL

EPSON

TWIN TURBO 8 MEG PCI 449
TWIN TURBO 4 MEG PCI 299
TWIN TURBO 2 MEG PCI 199

NEC

NEC M500 15" 389
NEC M700 17" 699
NEC P750 17" 779
NEC E700 669
NEC P1150 1349
NEC E1100 21" 1199
NEC P1150 21" 1299

Zip

ZIP DRIVE 100 MEG 139
ZIP DRIVE PLUS 189
JAZZ DRIVE 1GIG/2GIG CALL
ZIP CART 10 PACK 119
JAZZ CART 79
IOMEGA BUZ 189
VST PB 3400 ZIP DRIVE 329

LinoColor

Jade 449
Saphir 1389
Saphir Ultra 3289
Opal 4899
Opal Ultra 6199

**GCC
TECHNOLOGIES**

GCC ELITE XL-608 1899
GCC ELITE XL-1212 1399
GCC ELITE XL-616 2099
GCC ELITE XL-808 2499
GCC ELITE XL-1208 3199
GCC ELITE XL-1208 PLATE 4199

RASTEROPS

SUPERSCAN MC-6215 569
SUPERSCAN MC-6315 669
SUPERSCAN MC-7515 949
SUPERSCAN MC-20" 1169
SUPERSCAN MC-801 1499
SUPERSCAN MC-801-HR 1599

EPSON

STYLUS COLOR 600 259
STYLUS COLOR 800 369
STYLUS COLOR 3000 1669
EXPRESSION/636/EXEC 729
EXPRESSION/636/ART 929
EXPRESSION/636/PRO 1249

All prices are cash discounted. Prices subject to change without notice. Not responsible for typos. An asterisk "*" denotes refurbished product.



Macintosh Systems & Peripherals

Guaranteed Low Prices • Huge Inventory

Pricing, Product Spec's and Specials at www.digicore.com

** SOFTWARE **

Full Retail Versions • Not Upgrades
 Adobe Pagemaker 6.5 289
 Adobe Illustrator 7.0 299
 Adobe PhotoShop 4.0 325
 Microsoft Office 4.21 249
 MacroMedia Freehand 7.0 299

Storage Products

Iomega Zip Drive 139
 Iomega Jazz Drive 1GB 375
 Iomega Jazz Drive 2GB 579
 Syquest Syjet 1.5 GB 379
 La Cie 2.1 External 249
 La Cie 4.3 AV External 399
 Seagate Hawk 2 GB 249
 Quantum 4.5 Atlas 649
 Seagate 9 GB Barricuda 799
 La Cie 9GB AV External 899
 LaCie 18GB RAID Array 2950
 Atto Express PCI Wide 359
 JackHammer PCI Wide 379

PRINTERS

Apple SW 4500 335
 Apple SW 6500 459
 Apple LW 4-600 745
 Apple LW 12-640 1275
 Apple LW 8500 (20 ppm) 2225
 Apple Color LW 12-660 5450
 Epson Color Stylus 600 285
 Epson Color Stylus 800 399
 Epson Color Stylus 1520 739
 Epson Color Stylus 3000 1769
 Epson Color Stylus Pro XL 1389
 Hewlett Packard 870CSI 389
 Hewlett Packard 6MP 885
 Hewlett Packard 5M 1555
 Hewlett Packard 4MV 2495
 Tektronix Phaser 140/350 925/2765
 Tektronix Phaser 550 8099

Video / Graphics

TwinTurbo - 4 / 8 Meg 299 / 499
 #9 Imagine 128 8 Meg 749
 Xclaim VR - 2 / 4 Meg 199 / 299
 ThunderPower 30/1600 829
 Miromotion DC20 599
 MiroMotion DC30 675
 Targa 1000 / 2000 1575 / 2985
 Targa 2000 PRO 3375
 VideoVision Studio 2.0 2299

RCD & Optical Drives

Fujitsu Dynamo 640 489
 FWB Hammer Dat 8000 1199
 Olympus 2.6 Power MO 1699
 Pinnacle Vertex 2.6 995
 Pinnacle Apex 4.6 1425
 VST 230 MB PB1400 425
 Yamaha CD 4X6 w/Toast 699

All Major Credit Cards-
 Corporate & School PO's-
 Wire Transfer & C.O.D.'s-

POWERBOOKS POWERMACS



Targus Carry Case \$39
 Leather Carry Case \$65
 33.6 Fax Modem Pcmci \$139
 10BT Ethernet Pcmci \$99
 56k Fax Modem Pcmci \$265
 56k Modem/Ether Pcmci \$345



Custom Configurations
 Available and
 Ready to Ship in
 24 Hours

G3 PowerMacs

G3/233, DT 32-2G - 24xCD 1719
 G3/233, DT 32-2G - 24xCD-56K 1829
 G3/233, DT 32-2G - 24x - Zip 1856
 G3/266, DT 32-4G - 24x - Zip 2065
 G3/266, DT 64-4G - 24x - Zip 2140
 G3/266 AV, MT 32-6G - 24x - Zip 2565
 G3/266 AV, MT 64-6G - 24x 2565
 G3/266 AV, MT 96-6G - 24x - Zip 2785
 G3/266 AV, MT 32-6G - 24x - Jaz 2815

PowerMacs

6500/225, 32-3 GB -12x-33.6 1285
 6500/250, 32-4 GB -24x- 56k 1499
 6500/250, 32-4 GB -24x- 56k -Zip 1645
 6500/275, 32-6-24xCD-56k-Zip 1890
 6500/275, 48-6-24xCD-56k-Zip 2117
 6500/300, 64-6-24xCD-56k-Zip 2269
 7300/180, 16-2GB - 12xCD 1350
 7300/180, PC Comp 32-2GB-12x 1689
 7300/200, 32-2GB - 12xCD 1499
 8600/250, 32-4GB - 24xCD - Zip 1958
 8600/300, 32-4GB - 24xCD - Zip 2299
 9600/300, 64-4GB - 24xCD - Zip 2898
 9600/350, 64-4GB - 24xCD - Zip 4099

UMAX COMPUTERS

Huge Blow-Out
 On All Umax
 C600's, J700's & S900's

MEMORY UPGRADES

TECHWORKS - LIFE TIME WARRANTY
 8 Meg Dimms & Simms 60ns 45
 16 Meg Dimms & Simms 60ns 89
 32 Meg Dimms & Simms 60ns 99
 64 Meg Dimms 199
 PB 1400 8 / 16 / 24 75 / 99 / 185
 PB 1400 32 / 48 Modules 199 / 355
 PB 2400 16 / 32 Modules 119 / 199
 PB 3400 16 / 32 / 48 99 / 195 / 315
 PB 3400 64 / 128 Modules 389 / 735



Call For Unlisted Items
 Over 2500 Macintosh
 Products Available

Leasing

On Approved Credit to...

Business and Individuals

Small Business
 Internet Solution

only
 \$2399 **\$81**
 per mo.



G3/233 Mhz 32 Megs Ram,
 2 Gig HD, 12xCD, Ethernet
 15" AV Display, Ext., Keyboard & Mouse
 56.6 k Fax Modem, Netscape Ver. 3.0
 Microsoft Office Ver. 4.2.1,
 Internet Connection Kit, Mac OS 8.0

Home-Work and Fun!!

\$1799

\$59
 per mo.



6500/250 32 Megs Ram, 4G HD, 24xCD
 15" AV Display, Ext. Keyboard & Mouse
 Epson Stylus 600 Color Printer, 56.6 Fax Modem
 Internet Connection Kit, Quicken, Claris Works
 Touchbase / Date Book Pro, Encyclopedia
 3-D Atlas, Dictionary, Mayo Family Health
 Clip Art, 3-D Accelerated Games, and much more!

Graphics Station

Speed Demon
 w/Adobe Bundle

\$4479



\$151
 per mo.

G3/266 AV 64 Megs Ram, 6 Gig HD
 24xCD Player, ATI 6 MB Accelerated Video
 Iomega Zip Drive, Apple 17" AV Display
 Apple Extended Keyboard & Mouse
 Adobe PhotoShop 4.0, Adobe PageMaker 6.5
 Adobe Illustrator 7.0

Cyber Shop & Product Info at...
www.digicore.com

Call **DigiCore**

Order Toll Free

800-858-4622

International & Dealers

818-785-2800

24 Hour Fax

818-785-3100

15500 ERWIN ST. VAN NUYS CA 91411

36 Month Lease w/Purchase Option

\$2500	\$4000	\$8000	\$15,000	\$25,000
\$85	\$136	\$267	\$496	\$825

Sale Price
 Your Cost

GE ON-SITE WARRANTY 2nd - 4th Year

\$700 - \$1200	\$1201 - \$2000	\$3001 - \$4000	\$4001 - \$5000
\$129	\$159	\$219	\$249

• Lease rates listed are for businesses - call for individual rates • Leasing is O.A.C. • Prices listed are C.O.D. • Pricing & Availability subject to change • Call for best Price • Returns Require DigiCore RMA •

CIRCLE 410 ON READER SERVICE CARD

800-689-3933

www.lacc.com
Service (310) 479-0999
Fax (310) 312-9041

LA computer center

Monitors



RASTEROPS
MC7515 19" .22DP
1600X1200 Monitor
\$949.

RASTEROPS HITACHI 3 year warranty



- Mc 620 17" .28dp 1152X870 489.
- Mc 6315 17" .22dp 1280X1024 629.
- Mc 7515 19" .22dp 1600X1200 949.
- Mc 801 21" .22dp 1600X1200 1349.
- Mc 801HR 21" .22dp 1600X1200 1549.

SONY

- 100ES/100GS 15" 339/369.
- 200ES/200GS 17" 589/649.
- 200PS 17" 769.
- 400PS 19" CALL.
- 300SF 20" 1099.
- 500PS 1599.

**Corporate Accounts
Welcome
Business Leasing
Available
Reseller Inquiries
Welcome
Fortune 1000, University,
School, & Government
Purchase Orders Accepted
We Also carry Toshiba,
Compaq, IBM notebooks.**

Scanners

- Agfa Arcus II w/Transparency Adapter 1499.
- Agfa StudioStar w/ Full Photoshop 799.
- Agfa SnapScan 310 199.
- Agfa SnapScan 600 389.
- Umax Astra 600S w/Photo Dlx. 269.
- Umax Astra 1200S w/Photo Dlx. 449.
- Umax Powerlook II w/ Photo Full 1199.
- Umax Powerlook 2000 3350.
- Umax Mirage II SE w/Trans. Adapter 3699.
- Microtek Scanmaker V300 199.
- Microtek Scanmaker III Full Photo/Transp. Ada. 1399.

Monitors

- NEC
- A500 15" 1280x1024 .28dp 329.
- E500 15" 1280x1024 .25dp 379.
- A700 17" 1280x1024 .28dp 579.
- P750 17" 1600x1200 .25dp 799.
- E1100 21" 1600x1200 .28dp 1349.
- E1100 21" 1600x1200 .28dp 1249.
- XP37+ 39" 1024x768 .85dp 7199.

radius

- SuperMac17XL 17" 399.
- Precision View 21" 1579.
- Presview 21" SR 2999.
- Presview 17" SR 1599.
- Thunder 30/1600 599.
- Thunder Power 30/1920 849.
- Thunder TX 1152 1049.
- Thunder 3D 1699.

ViewSonic

- 15GS 15" 1280x1024 .27dp 349.
- 15GA2 15" 1280x1024 w/ispkr .27dp 369.
- EA771 17" 1024x768 w/ispkr .27dp 529.
- EA771B 17" 1024x768 w/ispkr .27dp 539.
- 17GA 17" 1280x1024 .27dp 569.
- P775 17" 1600x1200 .25dp 649.
- P775 17" 1600x1200 .25dp 699.
- G800 20" 1600x1200 .28dp 999.
- P815 21" 1600x1200 .25dp 1299.
- G810 21" 1600x1200 .28dp 1199.
- P810 21" 1600x1200 .25dp 1249.
- PJ800 LCD Projector CALL.

Apple 1705 17" Monitor \$499

- Apple 15" AV 349.
- Apple 15" 329.
- Apple 1710 17" 649.
- Apple 720 17" CALL.
- Apple 750 17" 699.
- Apple 750 17" 899.
- Apple 850 20" 1399.
- Apple 850 20" 1749.

Apple Processors

- Apple 132 MHz 604e 99.
- Apple 150 MHz 604e 149.
- Apple 200 MHz 604e 349.
- Apple 233 MHz 604e 449.

Newer Technology

- MAXpower 200MHz 604e with So I 599.
- MAXpower 225MHz 604e with SBT 699.
- MAXpower C250MHz 604e no SBT 349.
- MAXpower C250MHz 604e no SBT 439.
- MAXpower Pro 250MHz 750 512k Bxsd. Cache 1199.
- MAXpower Pro+266MHz 750 1MB Bxsd. Cache 2099.
- NUpower 1400 183MHz 603se 128K12 Cache 549.
- NUpower PB 500 183MHz 603se 699.
- VIEWpower PB1400 160i video card 249.
- PC Card Video In/Capture 269.

FedEx

- WE SHIP WORLDWIDE
- NEXT DAY SHIPPING
- SAME DAY SHIPPING

Macintosh PowerMac's

- G3/266 32MB 4GB 24x4CD 100mb Zip \$2599
- 9600/300 4GB 24x4CD 100mb Zip \$2599
- 7300/180 16MB 12x4CD No Monitor \$1299

- G3/233 32/4G/24X/DESKTOP 1699.
- G3/266 32/4G/24X/DESKTOP 2099.
- 9600/300 64/4G/24X/8MB VIDEO/Zip 2799.
- 9600/350 32/4G/24X/CD 3859.
- 9600/233 32/4G/12X/CD 2299.
- 9600/200 30/6G/12X/CD 2099.
- 9600/200 32/4G/12X/CD 2799.
- 9600/200MP 32/4G/12X/CD 2799.
- 9500/150" 16/2G/4X/CD 2150.
- 8600/300 32/4G/24X/CD 2099.
- 8600/250 32/4G/12X/CD 2150.
- 8600/200 32/2G/CD 2099.
- 8500/180" 32/2G/8X/CD 2400.
- 8500/150" 16/2G/CD 2599.
- 7600/132" 16/1.2G/CD 2799.
- 7300/200 32/2G/CD/KBRD. 1999.
- 7300/180 32/2G/8X/DOS Compatible P166 1999.
- 7200/120" 16/1.2G/4X/DOS 1299.
- 7200/120" 16/1.2G/CD 1149.
- 7200/90" 8/500/4X/CD 1149.
- 6100/66" 16/500/4X/CD/DOS 1199.
- 4400/200" 16/2G/12X/CD/KB/Ethernet 1199.
- 4400/200 16/2G/312X/Pentium 1199.
- 6500/225 32/2G/312X 1349.
- 6500/250 32/4G/24X/56K 1699.
- 6500/250 48/4G/12X/MS Office 1699.
- 6500/275 32/4G/CD/MDM 1999.
- 6500/300 64/4G/CD/Zip 1999.

- DOS compatibility cards for Power Macs 166MHz for only \$599. While Supplies last
- Macintosh
- Performs
- Monitor sold Separately
- 6360/120" 16/1.2G/CD 1399.
- 6400/200 16/2.4G/8X/CD 289.
- 6400/200 16/2.4G/8X/CD 289.
- 6400/180 16/1.6G/8X/CD 389.
- 6400/330DS" 12500X/CD/DOS 599.
- 6320/120" 16/1.2G/4X/CD 1399.
- 6320/120" 16/1.2G/4X/CD with monitor 1999.
- 6200/75" 16/1.2G/4X/CD 1399.
- 5400/120" 16/1.6G/8X/CD 15" built in 5200/75" 8/800/CD 1399.
- LC580 8/800 269.
- 750MB MAC external 499.
- CD-R W 580 RW external 5X/2XW 55/149.
- EZ135 MAC Cartridges after \$5 mail-in rebate 9.99.
- CD-R Media Single/10-Pack 1,999/18.
- Jaz 2GB Drive External SCSI 629.
- Jaz Drive Internal SCSI 299.
- Zip Drive External SCSI 149.
- Zip Drive Internal SCSI 149.
- Zip Plus External 179.
- 3 Pack Zip Cartridges 240.
- 10 Pack Zip Cartridges 130.
- Single Cartridges for Jaz 89.
- Single Cartridge for Zip 19.
- Elite XL-616 600dpi 16ppm 8MB 2049.
- Elite XL-608 600dpi 8ppm 8MB 1799.
- Elite XL-808 800dpi 8ppm 16MB 2399.
- Elite XL-1208 1200dpi 8ppm 24MB 3199.
- Elite XL-1208 Plate Maker 1200dpi 8ppm 32M 3999.
- Elite 1212 1200dpi 12ppm 8MB 1349.
- Dimage V Digital camera 595.
- Dimage Scan Digital camera 695.
- Quickscan 3S Digital camera CALL.

Macintosh Powerbooks

- G3/250 32MB 4GB 20x4CD 100mb Zip \$4499
- 3400/240 16MB 3GB 12x4CD \$2999

- 2300c" 100MHz 8/750 1999.
- 2300c" 100MHz 20/1GB/14.4 1999.
- 1400cs 117MHz 12/750 1799.
- 1400cs 117MHz 16/750/6x Cd 1999.
- 1400cs 133MHz 16/1.3G/8x 1799.
- 1400c 166MHz 16/2G/CD 1999.
- 2400c 180MHz 16/1.3G 2499.
- 3400c 180MHz 16/1.3G/12X/Modem 2799.
- 3400c 200MHz 16/2G/CD/Modem 2599.
- 3400c 200MHz 16/2G/CD 2299.
- 3400c 240MHz 16/3G/12X/Modem 3299.
- 5300c 32/1GB 1999.
- 5300c 16/1GB 1299.
- 5300c 8/750 1099.
- 540c 4/320 Used 999.
- 520c 4/240 999.
- 520 4/240 999.
- DUC250" 12/200/Modem 799.
- DUC280" 12/240/Modem 999.
- DUC280C" 12/240 799.

WACOM

- AnZ 4x5 139.
- AnZ 6x8 289.
- AnZ 12x12 389.
- AnZ 12x18 599.

Now You See It

- Nexus GA Page 8MB VRAM 499.
- XClaim 3D 4MB 169.
- XClaim 3D 8MB 149.
- Video Upgrade 4MB 99.
- 2MB IMS Video Card 199.
- 4MB IMS Video Card 299.
- 8MB IMS Video Card 499.

IXS Video

- Global Village
- GV 56K Teleport 159.
- GV 56K PCMCIA 159.
- GV 56K PCMCIA + Ethernet 299.
- GV 19.2 Mercury PB 500 Series 129.
- GV 14.4 Gold PCMCIA 99.
- GV 14.4 Gold Teleport External 69.
- Powerport Platinum 33.6 PCMCIA PB 1400 189.
- Teleport 33.6 w/Voice 159.

Robotics

- Sportster 56K 159.
- Sportster 56K PCMCIA 159.
- Sportster 33.6K 159.

Memory

- 16MB Dimm PPC 59.
- 16MB Simm Performa PC 59.
- 16MB for Powerbook 1400 3400 59.
- 24MB for Powerbook 1400 129.
- 32MB Dimm PPC 89.
- 32MB Simm Performa PC 89.
- 32MB for Powerbook 1400 3400 179.
- 64MB Dimm PPC 149.
- 64MB for Powerbook 3400 279.
- 128MB for Powerbook 3400 479.

PHILIPS/MAGNAVOX 4 YEAR ON SITE WARRANTY!

- ASK YOUR SALES REP REGARDING EXTENDED ON-SITE WARRANTY ON NEW AND RE-FURNISHED PRODUCTS.
- THE ON-SITE WARRANTY BEGINS 31 DAYS AFTER THE INVOICE DATE IN MOST SITUATIONS.
- \$701 to \$1200 \$1201 to \$2000 \$2001 to \$3000 \$3001 to \$4000 \$4001 to \$5000 \$5001 to \$7500 \$7501 to \$10000 \$10001 to \$15000
- \$157.99 \$185.99 \$207.99 \$261.99 \$291.99 \$343.99 \$431.99 \$552.99

Visit Us At Our Web Site

http://www.LACC.com
24Hrs A Day -- On-Line Catalog & Ordering
E-Mail us at: lacc@lacc.com or Call us at (800) 689-3933

Macintosh Powerbooks

- G3/250 32MB 4GB 20x4CD 100mb Zip \$4499
- 3400/240 16MB 3GB 12x4CD \$2999

- 2300c" 100MHz 8/750 1999.
- 2300c" 100MHz 20/1GB/14.4 1999.
- 1400cs 117MHz 12/750 1799.
- 1400cs 117MHz 16/750/6x Cd 1999.
- 1400cs 133MHz 16/1.3G/8x 1799.
- 1400c 166MHz 16/2G/CD 1999.
- 2400c 180MHz 16/1.3G 2499.
- 3400c 180MHz 16/1.3G/12X/Modem 2799.
- 3400c 200MHz 16/2G/CD/Modem 2599.
- 3400c 200MHz 16/2G/CD 2299.
- 3400c 240MHz 16/3G/12X/Modem 3299.
- 5300c 32/1GB 1999.
- 5300c 16/1GB 1299.
- 5300c 8/750 1099.
- 540c 4/320 Used 999.
- 520c 4/240 999.
- 520 4/240 999.
- DUC250" 12/200/Modem 799.
- DUC280" 12/240/Modem 999.
- DUC280C" 12/240 799.

Powerbook Hard Drives

- 1.4GB Toshiba 1401MAV 12ms 179.
- 2.1GB Toshiba 2103MAV 12ms 239.
- 3 GB Hitachi Slim 12ms 349.

External Hard Drives

- IBM Orion 2.1GB SCSI 3.5 299.
- IBM Capricorn 4.3GB Ultra Wide SCSI 3.5 499.
- Quantum Sonata 2.1GB SCSI 3.5 279.
- Quantum Sonata 4.3GB SCSI 3.5 329.
- Quantum Atlas II 4.5 Ultra Wide SCSI AV 3.5 749.
- Quantum Atlas II 8.1 Ultra Wide SCSI AV 3.5 949.
- Quantum Atlas II 8.1 Ultra Wide SCSI AV 3.5 1049.
- Seagate Cheetah 4.3 Ultra SCSI AV 10000RPM 699.
- Seagate ST34371N 4.3GB Ultra SCSI 3.5 AV 699.
- Seagate ST34371W 4.3GB Ultra SCSI Wide 3.5 AV 399.
- Seagate Cheetah 9.1GB Ultra SCSI AV 10000RPM 1199.
- Seagate Cheetah 9.1GB Ultra W SC AV 10000RPM 1299.

Software

- Microsoft Office 97 249.
- Microsoft Word 97 179.
- Microsoft Excel 97 179.
- Microsoft Powerpoint 97 189.
- Macromedia Director 199.
- Microsoft Access 97 199.
- Adobe Photoshop 4.0 329.
- Adobe Pagemaker 6.5 329.
- Adobe Illustrator 299.
- Adobe After Effects 1289.
- Macromedia Freehand 299.
- QuarkExpress 639.

Printers

- HP DeskJet 340 299.
- HP DeskJet 670C/692C 199/299.
- HP DeskJet 820C/870C 279/379.
- HP LaserJet 6LX/6PKI 385/729.
- HP LaserJet 6MP/5MP 849/1399/649.
- HP LaserJet 5/5N 949/1199.
- HP LaserJet 4V/4VM 1699/2399.
- HP LaserJet 5SI/5MX 2299/3399.
- HP Color LaserJet 5/5M 3799/4799.
- HP OfficeJet 590/1550C Pro 599/939.
- HP 4000 1399.
- HP 4000Tn 1499.

EPSON

- Epson Stylus Color 600/800 269/379.
- Epson Stylus Color 3000 1899.
- Apple Select 360" 899.
- Apple Laser 12/640 989.
- Apple Laser 16/600PS 999/1299.
- Apple Laserwriter 8500 2299.
- Apple Stylewriter 1500 159/199.
- Apple Stylewriter 4100 329.
- Apple Stylewriter 4500 229.
- Apple Stylewriter 6500 379.

Apple

- Phaser 140 COLOR 949.
- Phaser 300X COLOR 999.
- Phaser 350 COLOR 2999.
- Phaser 380 COLOR 7999.
- Phaser 450 COLOR 6099.

Tektronix

- 10BT Ethernet 59.
- INTRASWITCH 530FL 10BASE FL 2799.
- 5215XP 100BT-FX 869.
- Ready Switch 5104FX ENET 4-10BT; 1-100BTX 299.
- AND MORE STUFF FROM ASANTE IN STORE

Asante

- Phaser 140 COLOR 949.
- Phaser 300X COLOR 999.
- Phaser 350 COLOR 2999.
- Phaser 380 COLOR 7999.
- Phaser 450 COLOR 6099.

Memory

- 16MB Dimm PPC 59.
- 16MB Simm Performa PC 59.
- 16MB for Powerbook 1400 3400 59.
- 24MB for Powerbook 1400 129.
- 32MB Dimm PPC 89.
- 32MB Simm Performa PC 89.
- 32MB for Powerbook 1400 3400 179.
- 64MB Dimm PPC 149.
- 64MB for Powerbook 3400 279.
- 128MB for Powerbook 3400 479.

PHILIPS/MAGNAVOX 4 YEAR ON SITE WARRANTY!

- ASK YOUR SALES REP REGARDING EXTENDED ON-SITE WARRANTY ON NEW AND RE-FURNISHED PRODUCTS.
- THE ON-SITE WARRANTY BEGINS 31 DAYS AFTER THE INVOICE DATE IN MOST SITUATIONS.
- \$701 to \$1200 \$1201 to \$2000 \$2001 to \$3000 \$3001 to \$4000 \$4001 to \$5000 \$5001 to \$7500 \$7501 to \$10000 \$10001 to \$15000
- \$157.99 \$185.99 \$207.99 \$261.99 \$291.99 \$343.99 \$431.99 \$552.99

Visit Us At Our Web Site

http://www.LACC.com
24Hrs A Day -- On-Line Catalog & Ordering
E-Mail us at: lacc@lacc.com or Call us at (800) 689-3933

We Beat, We Match, We Deal

FANTASTIC DEALS ON...

MONITORS

20" Sony Trinitron



only **\$799***

- 20 inch at 17 inch price!!!!
- 19 inch viewable screen area
- Industrial grade design for longer tube life and less interference
- Superior trinitron technology

21" PressViews

- Unprecedented color control for accurate and consistent color
- Superior image quality, color fidelity, and control
- Customize the color environment in which images are displayed
- Integrated calibration for accurate and consistent color throughout the life of the display



from **\$1499***

DIGITAL VIDEO

Video Vision Studio

Available in Nubus and PCI

- Broadcast quality video output
- Proven Non-Linear Video editing technology



was **\$2999** from **\$999***

VideoVision Telecast

\$999*

- add multiple layers of video, special effects, and titling without generation loss video output

Digital VideoWork station

- PowerMac Technology
- VideoVision Studio
- 17" Monitor
- Full Motion Video Capture and Playback
- 32 mb RAM, 2.0 GB AV Hard Drive
- Adobe Premiere



All for the price of one digital video card!!

was **\$5599** only **\$2599!!**

*With Qualifying Monitor or Video Card Purchase

4 Year Warranties Available on most models

COMPUTERS

PowerMac 8500

- **POWERFUL 604 PROCESSOR!**
- G3 Processors Also Available!!
- Level-2 Cache
- Multimedia CD-ROM Drive
- Video Capture In and Out
- 3 Fast PCI Expansion Slots



\$1599*

Graphics Design Station

- PowerMac 8500 & 21" Diamondtron
- 604 Processing Power!!
- 16 mb RAM, 2.0 GB HardDrive
- Accelerated VRAM



\$2599
save \$500!!

20" COLOR MONITORS

- 20" Sony Trinitron
- Radius SuperMatch 20 Plus
- Multi-Scan 20" Trinitron
- 20" Multi-Resolution **NEW!**
- Radius PrecisionColor 20v
- Radius Intellicolor 20



\$799*
\$849
\$999
\$1099
\$1299
\$1299

21" COLOR MONITORS

- 21" DiamondTron Monitor
- RasterOps/Hitachi Superscan MC21 **NEW!**
- Ikegami 21" Diamondtron **NEW! 2 YEAR WARRANTY!**
- Radius Multiview 21
- Radius PrecisionView 21
- Radius 21" PressViews
- SuperMac 21" Color Display

\$1299!!
\$1599
\$1499
\$1299
\$1599
\$1499
\$1099

17" COLOR MONITORS

- SuperMac 17 Multi-Scan
- Radius PrecisionView 17
- Radius PrecisionColor 17
- Radius PressView 17sr **NEW!**
- Portrait Display Labs 1700 **NEW!**



\$499
\$599
\$699
\$1799
\$859

15" MONITORS

- PrecisionColor Pivot
- Radius 15" Pivot (Grayscale & Color Options)
- GRAYSCALE MONITORS**
- Two Page Grayscale (19 & 21" models) only **\$499**
- Radius Full Page Display **\$299**

CLEARANCE

call now, supplies limited

- Emachine video card (24bit 640x480) **\$75**
- Emachine video card (24bit 1024x768) **\$99**
- Spectrum 24 PDQ (24bit 1152x870) **\$199**
- Supermac Thunder 8 Accel. (8bit 1152x870) **\$99**
- Thunderstorm for Photoshop Acceleration **\$75**
- Atto Silicon Express 4 SCSI Accelerator **\$199**
- Video Spigot IIsi and LC (video capture) **\$89**
- Superview/Powerview (2pg's on Pwrbk & SE) **\$80**
- Radius Rockets Accel. for Mac II Series **\$159**
- 20" monitor w/Nubus card **\$199**
- Segate Baracuda 2.4gb AV Hard Drive **\$199**

ALL SALES FINAL ON CLEARANCE ITEMS!!!!

VIDEOVISION TELECAST

PCI and NUBUS Available

VIDEOVISION STUDIO

- VideoVision Studio Array
- 4gb Array with SCSI Accelerator

Video Vision Basic

- Video Spigot Pro
- FULL MOTION, full screen video

VideoVision PCI

Video Spigot Power

Video Spigot II Tape **Lowest price EVER!!**

Spigot Nubus LC and IIsi

- 24bit 640 X 480 Frame Capture

Awesome Prices On GRAPHICS CARDS

Radius Pro 24xp

Special \$199

Accelerate Your Video up to 10X!!

PCI VIDEO CARDS

- IMS Twin Turbo 128 **\$199**
- Radius PrecisionColor 8/1600 **\$399**
- ATI XClaim VR 2mb **\$219**
- Radius Thunder 3D **\$2199**
- Radius ThunderTX 1152 **\$1099**
- Radius Tempest **\$499**



NUBUS VIDEO CARDS

- 1600x1200 (21" or greater resolution) from **\$599**
- Thunder IIGX and Thunder IVGX series
- 1152x870 (21" resolutions) from **\$299**
- PrecisionColor 24x, Spectrum Power 1152, Futura
- 1024x768 (20" resolutions) from **\$199**
- PrecisionColor 24xk, Spectrum 24, Paintboard Lightning
- 832x624 (17" resolutions) from **\$99**
- PrecisionColor 24xp, Futura
- Se/30, LC, or PDS bus?? Call Us!!
- Photoshop Accelerators from **\$75**
- Color Calibrators from **\$99**

THOUSANDS OF CARDS IN STOCK!!! Call for prices on models not listed.

AWESOME BUNDLES!

PowerMac G3 & 20" Trinitron from **\$2899**

- 233MHz & 266MHz Processors Available!!!

PowerMac 9600 & 20" Trinitron from **\$3999**

- 200MHz, 300MHz, and 350MHz available!!!

PowerMac 8600 & 20" Trinitron from **\$2799**

- 200MHz, 300MHz, and 350MHz available!!!

Motorola 4000 & 20" Trinitron from **\$2299**

- StarMax Quality and Reliability!

Macintosh IIfx & 20" Trinitron **\$999**

- 24 bit Accelerated Graphics card included

We carry the full line of Apple and Umax systems!!
Call for prices on models not listed.

UMAX COMPUTER CORPORATION

- SuperMac C500 Series from **\$799***
- SuperMac C600 Series from **\$1099***
- SuperMac J700 Series from **\$1399***
- SuperMac S900 Series from **\$1899***

MOTOROLA COMPUTER GROUP

- StarMax 3000 603e processor from **\$799***
- Desktop and Minitowers available
- StarMax 4000 604e processor from **\$1199***
- Desktop and Minitowers available

* with purchase of qualifying in stock monitor or video card

Outrageous Values On PRINTERS

Apple LaserWriters

- Laserwriter IINT, NTX, NTR
- Laserwriter IIg
- Laserwriter 4/600
- Laserwriter Select 360
- Laserwriter Pro 630
- Laserwriter Pro 810
- Brands like HP, Newgen, Texas Instruments Also Available!!



QMS 860 Hammerhead **\$1799**

- 600 dpi 11 x 17 Tabloid Canon Engine

QMS PS825 Laser Printer **\$399**

- 8ppm Canon Engine, Postscript IBM/Mac

Star SJ-144 Color Printer **\$129**

NEW AND FACTORY RECERTIFIED
4 YEAR EXTENDED WARRANTIES AVAILABLE ON MOST PRODUCTS

CRA Systems, Inc. www.crasystems.com 800-375-9000



CRA Systems, Inc. 300 South 13th St., Waco, TX 76701 Monday thru Friday 9AM to 7PM CST Saturday 10AM-4PM Sales Dept. Only
Domestic Sales sales@crasystems.com Fax 254.750.9050 Consultants/Dealers 254.754.2120 International Sales 254.754.2120
Prices reflect 2% cash discount. Prices subject to change. Not liable for typographical errors. Dealers and consultants call for quantity pricing. We ship anywhere.
All Monitors, Printers, and CPU's are Factory Recertified unless otherwise stated. Call for latest pricing & availability on NEW Options.



CIRCLE 407 ON READER SERVICE CARD

COMPU.D 1-800-929-9333
International, Inc. www.compu-d.com

Sales: (818) 787-3282

Fax: (818) 787-5555

Visit our Web Site for Additional
Product Information & Current Price List.

e-mail: csales@compu-d.com
6741 Van Nuys Blvd., Van Nuys, CA 91405

PowerMacs
7300/180DOS 32-2GB, 12xCD **\$1575**

G3/233	32-4GB, 24xCD	\$1745
G3/266	Desktop 32-4GB, 24xCD, Zip	\$2145
G3/266	Tower 32-6GB, 24xCD, Zip	\$2695
9600/350	64-4GB, 24xCD	\$3995
9600/300	64-4GB, 24xCD, Zip	\$2795
9600/233	32-4GB, 12xCD	\$2395
8600/300	32-4GB, 24xCD, Zip	\$2245
8600/200	32-2GB, 12xCD	\$1995
7300/200	32-2GB, 12xCD	\$1465
4400/200DOS	32-2GB, 12xCD	\$1445

3400c/240 MHz	16/3GB, CD	\$2995
3400c/200 MHz	16/2GB, CD	\$2445
1400c/166 MHz	16/2GB, CD	\$1945
1400cs/133 MHz	16/1.3GB, CD	\$1695
DOS Card P/166		\$495

G3/250 MHz	32-5GB, 20xCD	\$4495
3400c/240	48-3GB, CD, 10B-T, 56K	\$3495
3400c/200	48-2GB, CD, 10B-T, 56K	\$2685
1400c/166	32-2GB, 8xCD, 33.6	\$2245
Duo2300c	8-750 & 40-2.1GB	\$995/1395

Printers & Displays

LaserWriter 16/600 PS	\$1095
12/640 PS 12ppm, 600DPI	\$995
Apple 1705/750 17" Display	\$485/685
Apple Vision 850/850AV	\$1395/1695

5M	\$1375
4MV/5MP	\$2295/595
4000N	\$1395

Deals of the Month

Adobe Photoshop 4	\$399
" PageMaker 6.5	\$359
" Illustrator 7.0	\$279
QuarkXpress 4.0	\$749
MS Office 98 MAC	\$459
UMAX Astra 1200	\$279
LaCie 2x6 CDR/Toast	\$369
LaCie 4x6 CDR/Toast	\$519

All prices are based on C.O.D. order & subject to change!

If you've bought any computer equipment recently
you probably shouldn't read this ad.



www.fivepercent.com

At fivepercent.com you can buy all major brands of Macintosh hardware and software at 5% above dealer cost.
(Unfortunately, our Sales Manager insists that we sell some Wintel crap too.)

voice: 510-689-9488 fax: 510-689-9487

PRICES & QUANTITIES SUBJECT TO CHANGE

Place Your Orders OnLine!

1-888-447-3728 • MacResQ • www.macresq.com

Toll Free
Apple Color
LW 12/660
\$2499
(w/ NEW
access. kit)

PARTS, PARTS, PARTS!!

CD 600i (tray) internal	\$79
CD 1200i (tray) internal	\$89
CD 1800i (tray) internal	\$199
mounting kits OR external cases avail.	
Manual inject floppies (661-0121)**	\$49
Auto inject floppies (661-0474)**	\$79
PB 100 & 500 series floppies**	\$89
Apple/Omega Zip Drives (internal)	\$99
Apple Design keyboard	\$39
PM 6100 DOS cards	\$99

MONITORS

Apple 12" Greyscale	\$79
Apple 13" RGB Display	\$179
Apple 14" Multi-scan	\$199
Apple 17" Multi-scan	\$499
Mac OS 7.6: \$18.99	
Mac OS 8: \$69	
SEAGATE 2.1 Gig 3.5" internal SCSI hard drives	\$179

Duo 2300c 36/750 14.4

\$999

Duo 280c 28/1 gig/14.4

\$799

Duo Dock II **\$249**

POWER SUPPLIES:**

LC thru Q 605	\$19
Mac II cx / ci / Q 700	\$49
Q 800 / PM 8100	\$99
PM 8500 / 9500	\$109
PERF. 630 thru 6200	\$69
Duo Dock	\$69
Q 900 / 950	\$99
PM 7100 (EXCH. ONLY)	\$69
PM 6100 (EXCH. ONLY)	\$89
II SI	\$49

Apple PM Processor Upgrade cards	
132 MHZ	\$49
166 MHZ	\$129
233 MHZ	\$299
(PM 7500 and up!)	

PowerBook Screen Repair...only at MacResQ!

We can repair: scratched screens, bad pixels, lines, & dead screens- priced from **\$199**

call for
more DETAILS!



25% re-stocking fee- ALL ITEMS REFURBISHED UNLESS NOTED AS NEW • All Parts Sold With a 90 Day MacResQ Exchange Warranty • ** = Exch. Required For Orders of 10 or Less • All Major Credit Cards With NO Surcharge.

CIRCLE 416 ON READER SERVICE CARD

Mitsui Blank CDs
 as low as \$1.99 each!

CD Recorders

 4x2x6 Yamaha CDRW \$499
 4x6 Yamaha \$499
 4x8 Panasonic..... \$399
 Add \$60 for external

CD-R Duos

 JAZ2CDR (4x8) \$859
 CD2CDR(12x/4x8) \$799
 DAT2CDR(2 Gig/4x8) \$995
 All Duo prices external

Multi CD Copiers

Call for price & config.

Media (CDs minimum 10)

 Media One \$2.19
 Mitsui \$2.49
 CD-RW \$19.99
 Jaz Cartridges \$89.95

Software

 Copy Cat(multi CD) \$199
 Toast \$79
 Gear \$59

CD Printer

Super Image MP600 ... \$929

 Our web catalog: www.copycatshop.com

What's the Big Deal?

NEW! **CD-Rs From \$399** **Complete Kits \$539 & Up**

Standalone Duplicators
 Available With
 SCSI &
 DAT Audio
 Inputs

From \$1395

\$799 & Up **Here's the Big Deal!** **\$859 4x8 CD-R** **\$929 2 in 1 printer!**

CD Copiers
 We'll build
 the size you
 need.
 Call for prices and
 configurations.

Prints on CDs or Paper!

Order Toll Free 1-888-663-3121
 Open Mon-Fri 7 am - 7 pm 760.510.9880 Voice 760.510.9888 Fax

Copy Cat Shop
 A DIVISION OF Media One

VISA MasterCard AMERICAN EXPRESS

CIRCLE 422 ON READER SERVICE CARD

 WE GUARANTEE
 THE BEST PRICES!

MediaGuide

 Prices Listed
 Reflect a 3%
 Cash Discount

(800) 463-0686
BUY/SELL/TRADE
(800) 463-0686

Mac Plus 1/0.....\$49	SE 4/40.....\$79
SE/30 8/40.....\$149	Classic 4/40.....\$119
Mac II 4/40/Video...\$69	LC 4/40.....\$119
IIcx 8/40/Video.....\$99	IIsi 5/40.....\$99
IIci 8/80.....\$149	IIx 8/80/Video..\$119
Mac IIfx 8/160.....\$199	IIvx 8/160.....\$179
Q605 8/160.....\$349	Q610 16/500.....\$399
Q630 16/250.....\$399	Q650 16/230.....\$399
Q650 16/230.....\$449	Q700 8/230.....\$399
Q800 16/230.....\$479	Q900 8/230.....\$499
Quadra 660AV 16/230/CD.....\$499	
Quadra 840AV 16/230/CD.....\$649	
6100/60 8/230/CD.....\$549	
6100/66 8/230/CD.....\$599	
7100/66 8/230/CD.....\$649	
7100/80 8/230/CD.....\$699	
8100/80 8/500/CD.....\$799	
7200/75 8/500/CD.....\$649	
7200/90 8/500/CD.....\$749	
7500/100 16/1gig/CD.....\$1099	
Many other Power Macs in stock.....CALL!!	
PB 140 4/40.....\$299	PB 145 8/40.....\$399
PB 170 8/40.....\$499	PB 160 8/80/14.4.....\$529
Powerbook 165 14/160/14.4.....\$599	
Powerbook 180 12/120/14.4.....\$699	
Powerbook 180c 12/160/14.4.....\$799	

Duo 230 12/120/14.4.....\$399	
Duo 270c 12/240/14.4.....\$599	
Duo 280 12/120/14.4.....\$549	
Apple Duo Dock II.....\$299	
Powerbook 190 8/500.....\$799	
Powerbook 520 12/160/19.2.....\$799	
Powerbook 540 12/160/19.2.....\$899	
Powerbook 540c 12/320/19.2.....\$1099	
Powerbook 1400-series.....BEST PRICES!	
Powerbook 5300-series.....LOWEST!	
Apple 12" Mono.....\$89	Apple 12" RGB.....\$119
Apple 13" RGB.....\$149	Apple 14".....\$179
Apple 15" MS.....\$299	Apple 16" RGB.....\$349
Apple 17" MS.....\$499	Apple 20" MS.....\$899
Assorted 20" Color monitors.....from \$399	
Stylewriter 1200 (with new ink).....\$89	
Imagewriter II.....\$99	Laserwriter.....\$99
Laserwriter IIInt.....\$199	LW IIInt.....\$249
Laserwriter IIf.....\$299	Laserwriter IIg.....\$499
LW Pro 630.....\$699	LW 630 Env. feeder.....\$89
Imagewriter LQ.....\$99	Dye-Sub printers.....\$899
External hard drive case w/cable.....\$29	
Seagate 2 gig Barracuda HD (8.5ms).....\$229	
New Apple 8x CD-ROM.....int. \$99 / ext. \$149	
Apple Extended Keyboard II.....\$39	
HDI45 video card 6100/7100/8100.....\$25	

*** PARTS 'N MORE ***

Logic boards:	
Plus.....\$29	SE 800K.....\$29
Classic.....\$59	SE/30.....\$79
IIcx/IIsi.....\$49	IIci.....\$89
IIx.....\$49	IIfx.....\$99
Power supplies:	
Mac II, IIfx, IIcx.....\$29	LC, 475, 605.....\$29
IIcx, IIci, 650, 7100.....\$49	IIsi.....\$49
SE, SE/30.....\$29	SE, SE/30 analog brd.....\$29
Mac Plus analog board.....\$39	
8-bit NuBus video card.....\$39	24-bit.....\$99
NuBus ethernet.....\$29	IIsi NuBus adapt.....\$29
IIsi or SE/30 ethernet card.....\$39	
NEW ADB mouse.....\$25	
NEW Global Village 14.4 PCMCIA.....\$49	
120Mhz 604 daughtercard.....\$25	
Digital video in/out cards.....from \$199	
VideoVision Studio (NuBus).....\$799	
800k floppy.....\$25	800k external.....\$39
1.44 floppy drives from only \$69	
Powerbook parts & much more.....CALL!	
1MB VRAM.....\$21	SIMMs & DIMMs.....CALL!
1mb 30-pin SIMMs.....\$5	4mb 30-pin.....\$19
Astound 1.0.....\$25	MS Office 4.2.1.....\$149
OmniPage Pro 5.0.....\$79	Quicken 6.0.....\$19
MS Excel 4.0.....\$49	Other software.....CALL!

Powerbook Duo 280c
40/1gig/14.4
Only \$799 !!
Add a Dock for just \$99 !!
BUNDLE SPECIALS:

 Mac IIci 8/80,
 Apple 13" RGB,
 Ext. KB, mouse...\$299

 Mac IIfx 8/80
 bundle...\$329

 Mac IIsi 5/80
 bundle...\$249

 Mac IIcx 8/80
 bundle...\$249

 Kodak DC-50
 digital
 camera
 Only \$399

 New Apple-
 logo 500MB
 hard drive
 \$139

 Plaintalk mic
 \$7

 NEW GV 14.4
 modem for
 PowerBk 1xx
 \$39

 256K L2
 cache for
 6100/7100
 \$12

 New Newton
 120 w/modem
 & stfwr...\$199

 Refurbished
 Equipment has a
 90 day warranty

 Fax: (303) 571-5020 • Local & Int'l: (303) 571-1900
 Hours: M-F 8-6, SAT 10-5 MST • 777 N. Santa Fe Dr., Denver, CO 80204
 Sales@MediaGuide.com • Purchasing@MediaGuide.com • <http://www.mediaguide.com>

 Prices &
 Availability Subject
 to Change

Apple G3
As Low As
\$1749

The Lowest Finance Rate Available FREE Software SuperBundle - \$3500 Value

Software SuperBundle - Director, Adobe
Premiere, Illustrator, PageMaker, Photoshop,
LivePicture, Omni page Professional, DOS
Mounter 95 Free with this Ultimate Workstation.

FULL-LINE AUTHORIZED SERVICE CENTER - MAC & PC
EQUIPMENT REPAIR, DATA RECOVERY, SHORT-TERM
RENTAL, LOANER PROGRAM AND POWERPC PROCESSOR
- 120/132/150/180/225/233/250/300/350 MHZ
250MHZ UPGRADE AVAILABLE AS LOW AS \$589.

SUPERBUNDLE!
\$349
PER MONTH



Power Macintosh G3 Ultimate Graphics Workstation

- PowerPC G3/266MHZ or PowerTower Pro 250MHZ MP
- Internal 24x CD-ROM
- **416 MB RAM**
- 18GB internal RAID Disk
- Extended keyboard
- **Radius PrecisionColor 21" Color - 1600X1200 0.25mm Color monitor**
- **Twin-Turbo - 128bit Graphic Engine, 1600x1200, w/8MB Graphic Engine**
- **Agfa Arcus II w/ Trans, 36-bit Scanner**

- External combo drive combo w/Jaz drive, ZIP, S200MB w/Cart.
- Apple LaserWriter 600dpi PostScript printer 4/600 w/one cartridge and Cables
- Active SCSI terminator, One 25/50 SCSI cable, five 50/50 cables
- UPS Battery Back-Up
- Apple QuickDraw 3D PCI Accelerator Card - 12 X Faster
- Image Solutions Extended Services

Adobe Specials - PageMill 2 - \$89 (MAC & Win.)

- Adobe Photoshop 4.0/Retail \$279/\$325
- Adobe Photoshop 3.0.5/LE \$199/\$99
- Adobe Illustrator 5.5/7.0 \$199/\$289
- Adobe PageMaker V6.0/V6.5 \$199/\$289
- Adobe Premiere 1.0.1/4.2 \$99/\$329
- AfterEffects/Product. Bndle \$479/\$1689
- Persuasion V3/Dimension3 \$229/\$125
- Acrobat V3.0/Type-on-Call \$149/\$39
- FrameMakerV5/Streamline4 \$469/\$125
- Adobe PhotoDeluxe/ATM \$35/\$59

MacroMedia sales - Director 5 - \$189 (MAC & Win.)

- Authorware 3/Inte. Studio \$289/\$979
- Authorware 4/Inte. Studio \$729/\$2529
- Director5/Multimedia Studio \$189/\$289
- Director6/Multimedia Studio \$589/\$749
- Freehand 7/Graphics Studio \$289/\$349
- Macro. Fontographer/Flash 2 \$199/\$169
- Macromedia xRes / Ex. 3D \$99/\$99
- SoundEdit 16/+ DECK II \$189/\$249

Microsoft sales - Office V4.2.1 - \$149 (MAC & Win.)

- Microsoft Office 4.2.1 /97 \$199/\$289/\$329
- Microsoft Word 6.0.1/Excel V5 \$199
- M.S. Project v4/FrontPage \$249/\$99
- PowerPoint 4/Works 4 \$199/\$99

MetaCreation - Infini-D4 - \$459 (MAC & Win.)

- F.D. 3D STE/ Bryce 2 \$329/\$159
- F.D. Detailer / Expression \$249/\$119
- F.D. Painter V3/4/5 \$129/\$179/\$229
- FD Poser v2/Dabbler V2 \$115/\$38
- Kai's Power Tool V2/3/SE \$49/\$99/\$69
- Ray Dream Designer/Studio \$87/\$229
- BackStage Studio / StudioVision Pro \$329/\$689
- ElectricImage Broadcast / JMP 3.2 \$1689/\$479
- Hollywood FAX/ Hyper Studio \$489/\$179
- Illuminaire Paint / Presenter 3D 3.6 \$889/\$1389
- LightWave 3D 5.0/5.5 / Aurorix \$1189/\$1389/\$259

Monitor & Display Card

- DSC 15"/17" Color \$269/\$395
- DSC 19"/20" Color \$849/\$989
- ViewSonic 17"/19" \$549/\$949
- Radius17"/21" Color \$639/\$1589
- IMS 4MB/8MB 3D \$285/\$445

PrinterSTY1500\$199

- EpsonStylus3000 \$CALL
- Apple Laser 4/600 \$649
- HP 4MV 11x17 \$2389
- GCC XL1208, 11x17S3869
- Apple12/600 Color \$3589*

Ext. H/D, DAT Tape, MO, SyQ & CDR Devices

(Minus \$39 for Internal Drive)

	Ext.	Turbo
42MB/230MB/540MB/750MB	\$89/\$129/\$149/\$199	+\$25
1GB/2GB/3.2GB/4.3GB	\$219/\$265/\$335/\$379	+\$25
6.4GB/8.4GB/9.1GB	\$489/\$569/\$599	+\$25
7200rpm 4.5GB IBM/Quantum/Seagate	\$519/\$529/\$539	+\$29
Micropolis/Quantum Fuji 9.0GB 7200rpm	\$889	+\$49
SONY DAT 4000/5000/7000	\$679/\$779/\$879	+\$89
DLT Tape Drive 30GB/40GB	\$2649/\$3149	+\$99
ExtraByte 5GB Tape Dr.	\$1199	+\$1249
SyQuest 270/200MB Ext. Drive	\$299/\$339	+\$25
SyQuest EZ135/ EZ230	\$109/\$145	+\$25
Panasonic 650MB M.O. Dr.	\$699	\$749
SONY 1.3GB M.O. Drive	\$989	\$1099
Mitsubishi 4.6GB M.O.	\$1189	+\$99
Olympus 230MB/2.6GB M.O. Drives	\$309/\$1649	+\$49
Fujitsu 230/640 MB M.O. Drive	\$469/\$599	+\$59
Philips/Ricoh Rewritable CDR 6X/2X	\$509/\$529	+\$49
SONY CDR 6X/2X w/Toast	\$379	\$429
Yamaha CDR 6X/4X w/Toast	\$539	\$629
Ext. Jaz/Zip & DiskArrays	Ext.	Turbo
IOmega Zip ext. Dr.	\$135	\$155
Jaz ext. Dr. 1GB/2GB	\$889/\$549	+\$25
Jaz + CDR ext. Dr. w/SW	\$779	\$989
SyJet 1.5GB Dr. w/2X cart.	\$385	\$429
4GB DiskArray	\$749	\$799
8GB F&W DiskArray	\$1289	\$1389
16GB F&W DiskArray	\$2449	\$2599
24GB F&W DiskArray	\$3549	\$3699

Scanner: Polaroid 35LE - \$739

Epson 836/636	\$CALL/\$689	Sale
LinoColor JADEII / SAPHIR	\$445/\$1379	
Microtek V300/E3/E6	\$135/\$145/\$269	
UMAX Astra 610 /1200	\$145/\$245	Sale
UMAX PowerLook III/3000	\$CALL/\$CALL	
Agfa StudioStar / Arcus II	\$729/\$1229	Sale
Nikon CoolScan / Super	\$875/\$1599	

Optical

- 74Min CD \$2.49
- DSC 128MB \$7.49
- DSC 230MB \$9.79
- DSC 650MB \$28.99
- DSC 1.2GB \$37.99

**DIRECTOR
5 ONLY
\$99 w/
\$1000
PURCHASE**

Memory

	30 pin	72 pin	168 pin
4MB	\$25	\$19	-
8MB	\$37	\$27	\$27
16MB	\$69	\$55	\$55
32MB	-	\$99	\$99
64MB	-	-	\$199

\$79!



\$11*!



800-352-3420

Fax: 310-782-5974

Email: imagesol@earthlink.net

http://www.imagesolutions.com

385 Van Ness Ave. #110 • Torrance, CA 90501



Order from 6 to 9 weekdays, weekends from 9 to 9. Visit our showroom 9 to 6 weekdays, weekends by appointment.

Prices subject to change without notice. Not responsible for typographical errors. 24 hour replacement limited to products in stock.



Image Solutions

The solution provider for print shops, service bureaus and imaging professionals

POWERMAC 4400
200MHz 32/2GB/12XCD/KB/DOS
\$1439

POWERMAC 9600
300MHz 604e/64/4GB/24XCD
\$2790



PERFORMA 6400
200 MHz/16/1.6GB/8XCD/KYBD
\$1099

POWERMAC 7300
604e /16/2GB/12XCD/L2
\$1249

GENUINE APPLE 200/233MHz 604e PROCESSOR UPGRADE 7300/7500/7600/8500/9500/9600

Improves overall system performance by 158%.

Integrated floating point coprocessor, with 32K on-chip cache

\$249/\$289***

POWERMACS

G3	
266MHz Minitor	512K/32/6GB/24xCD/Zip/AV \$2699
266MHz Desktop	512K/32/4GB/24xCD/Zip \$2129
233MHz Desktop	512K/32/4GB/24xCD \$1779
9600	
350MHz	604e/64/4GB/24xCD \$3799
300MHz	604e/64/4GB/24xCD \$2790
233MHz	604e/32/4GB/12xCD/L2Cache \$2595
200 Mhz	MP604e/32/4GB/12xCD/L2Cache \$2985
200 Mhz	604e/32/4GB/12xCD/L2Cache \$2395
8600	
300MHz	604e/32/4GB/24XCD/L2 \$2195
250MHz	604e/32/4GB/24XCD/L2 \$2095
200MHz	604e/32/2GB/12XCD/L2 \$1895

POWERMAC 7300
200MHz 604e/32/2GB/12XCD/L2/DOS
\$1699

6500	
300 Mhz	64/6GB/24XCD/L2/ZIP/56.6 Mod \$2745
275MHz	48/6GB/24XCD/L2/ZIP/56.6 Mod \$2545
275MHz	32/6GB/24XCD/L2/ZIP/56.6 Mod \$2245
250MHz	32/4GB/24XCD/ZIP/56.6 Mod \$1775
225 Mhz	32/3GB/12XCD/L2/33.6 \$1435
4400	
200MHz	16/2GB/CD \$1299
200MHz	32/2GB/12XCD/KB/DOS \$1439

PERFORMAS

6400	200MHz/16/1.6GB/CD/KB \$1099
6360	160MHz/16/1GB/CD/KB \$1049*
6200	75MHz/8/1GB/CD/KB \$796*

UPGRADES

WITH ORIGINAL APPLE LOGIC BOARD

PM 8500 LOGIC BOARD UPGRADE	FROM Q800, Q840AV, PM 8100 TO 8500 \$995
PM 7600 LOGIC BOARD UPGRADE	FROM PM 7200 TO 7600 \$495
PM 5300/6300 UPGRADE L.B.(100MHZ)	FROM Q630, PF630, PF 5200 & 6200 \$349
Workgroup Server 9150/80 L.B. Upgrade	FROM 950, 900 \$599
DUO UPGRADE 200 Series To 2300	\$599
233MHz Processor Upgrade	\$289

Prices Subject to Change Without Notice
All Prices reflect 3% Cash Discount • * Refurbished

Upgrade your
7200 To 7600 \$495
Apple Original Upgrade



POWERBOOKS

G3	250 Mhz/32/5GB/20xCD \$4595
3400c	240 Mhz/16/3GB/CD \$3099
3400c	200 Mhz/16/2GB/CD \$2649
3400c	180 Mhz/16/1.3GB/CD \$Call
2400c	180 Mhz/16/1.3GB \$2289
1400cs	133 Mhz /16/1.3GB/CD \$Call
1400c	166 Mhz/16/2GB/CD \$2199
Apple Emate 300	\$729
DUO 2300c	100MHz/20/1GB/Mod* \$1395
5300CE	117 Mhz/16/1GB* \$1789
5300c	100 Mhz/16/750* \$1549
5300cs	100 Mhz/8/500* \$1149
PowerBook 100 & 500 Series In Stock	

Duo Upgrade
200 Series To 2300 Series
\$579

APPLE 166Mhz
Pentium Dos Card \$599

FOR CURRENT PRICES VISIT OUR WEB SITE AT:
<http://www.icni.com>

1.888.505.2211

Fax:(310) 445-6611 Tel:(310) 445-6600
FAX TOLL FREE FROM JAPAN: 00-31-114211
2045-B S. Barrington Ave. LA, CA 90025

***OLD PROCESSOR CARD IS REQUIRED TO BE EXCHANGED WITH THE NEW ONE

MONITORS

APPLE VISION 850	\$1449
APPLE 20" Multi*	\$1079
APPLE VISION 750	\$779
APPLE VISION 750 AV	\$869
APPLE 1705 Multi	\$529
APPLE 15" AV Multi	\$339
APPLE 15" Multi	\$295
NEC E500/E700	\$379-659
NEC 21" P1150/E1100	\$1389-1299
SONY 15" 100ES/15"100GS	\$339-369
SONY 17" 200ES/17"200GS	\$619-669
SONY 20" 300SF/ 20"SE2	\$1379-1869
VIEWSONIC 15" GS/ GA	\$329-379
VIEWSONIC 17"GA/ PT770	\$589-689
VIEWSONIC 20" P810/ P815	\$1289-1449
VIEWSONIC 20" PT813/ P810	\$1385-1289



PRINTERS

APPLE LaserWriter COLOR 12/ 660	\$3699
APPLE LaserWriter 12/ 640	\$1095
APPLE LaserWriter 8500	\$2289
APPLE LW 16/ 600	\$1395
APPLE LW 4/ 600	\$659
APPLE LW Color 2500	\$249
APPLE SW 1500	\$189
APPLE SW 1200	\$139
APPLE SW Color 4100	\$249
APPLE SW Color 4500	\$339
APPLE SW Color 6500	\$449
HP LASER JET 6MP	\$839
EPSON STYLUS 600/800 COLOR	\$279/\$379



SCANNER

AGFA Arcus II Transp/Full Photoshop	\$1479
UMAX ASTRA 1200S - Photo D/Full Photo	\$319/\$499
UMAX ASTRA 600S / Photo Delux	\$189
CALL FOR PRICES ON OTHER MODELS	

APPLE PARTS & ACCESSORIES

APPLE 166MHz Pentium Dos Card	\$539
Apple 166MHz for 4400	\$399
Original Apple BATTERY For PB 3400	\$129
Original Apple 12xCD-ROM	\$129
Apple Parts Catalog	Call

Shop at the most complete WEB

WWW.
MACTOGO.COM

MAC TO GO™

**your #1 Apple
Super Source**

Power Macintosh® G3/233 233MHz \$1819 32/4GB/24xCD	Power Macintosh® G3/266 266MHz \$2189 32/4GB/24xCD Zip/Desktop	Power Macintosh® G3/266 266MHz \$2719 32/6GB/24xCD Zip/AV/Tower	Powerbook® G3/250 250MHz \$4849 32/5GB/20xCD ACTIVE	Power Macintosh® 4400 200MHz 16/2G/CD/KB \$1199 200 Office 32/2G/CD/KB \$1399
Power Macintosh® 7300 180MHz 16/2G/CD/KB \$1349 200MHz 32/2G/CD/KB \$1489	Power Macintosh® 6500 225MHz 32/3G/CD/KB \$1399 250 MHz 32/4G/24XCD/56K \$1599	Power Macintosh® 6500 275MHz 32/6G/24xCD/Zip \$1979 275 MHz 48/6G/24XCD/Office \$2299	Power Macintosh® 6500 300MHz 64/4G/12XCD/Zip \$2099 300MHz 64/6G/24XCD/Zip \$2459	Power Macintosh® 8600 250MHz 32/4G/24xCD ZIP/KB \$2049
Power Macintosh® 8600 300MHz 32/4G/24xCD KB Call	Power Macintosh® 8600 300MHz 32/4G/24xCD ZIP/KB \$2299	Power Macintosh® 9600 200MHz 32/4G/CD/KB \$2179 200MP 32/4G/CD/KB \$3099	Power Macintosh® 9600 300MHz 64/4G/24xCD KB \$2889	Power Macintosh® 9600 350MHz 64/4G/24xCD KB \$4099
PowerBook® 3400 200MHz 16/2GB/CD \$2549 240MHz 16/3G/12XCD \$3399	PowerBook® 1400 CS/133 16/1.3G/8XCD \$1849 C/166MHz 16/2GB/8XCD \$2249	SONY 100ES/100GS 15" Monitor .25 Dot Pch \$335/365	SONY 200ES/200GS 17" Monitor .25 Dot Pch \$589/649	SONY 400PS/300SF 19" \$1149/1149 20"

POWERBOOK®

Pwrbk Sale!

Apple eMate 300	729
1400CS/117	16750/CD 1699
1400CS/133	16/1.3G/8XCD 1849
1400C/133	16/1.3/6xCD Call
1400C/133	16/1.3/8xCD Call
1400C/166	16/2GB/8xCD 22849
3400C/180	16/1.3G/12xCD Call
3400C/200	16/2GB/12xCD 2549
3400C/240	16/3GB/12xCD 3399
G3/250	32/5GB/20XCD 4849
DUO 2300C	20/1.1/ MDM *1349
2400C/180	16/1.3G 2249

Apple® Monitors

LOWEST PRICES EVER!

MS 15"	279
MS 15AV	329
MS 1705/1710	499/659
MS 720	539
AppleVision 750	719
AppleVision 750AV	819
AppleVision 850	1439
AppleVision 850AV	1729

WorkGroup®

WorkGroup Specialist!

6150/66	16/1.2/INTRNT	799
7250/120	16/2GB/INTRNT	999
7350/180	48/4GB/12XCD	2369
7350/180	48/4GB/CD/INTRNT	2795
7350/180	48/4GB/CD/AShr	2979
9650/233	64/4GB/CD/INTRNT	4699
9650/233	64/2X4GB/CD	4949
9650/233	64/2X4GB/CD/AS	5679
9650/233	64/4GB/AS/DAT	5679
9650/350	64/4GB/CD/AS	CALL
500/132	32/CD/BASE	6399
500/132	32/2GB/DAT/CD	7789
700/150	32/1GB/CD	7349
700/150	48/4GB/DAT/CD	9149
700/200	48/2-4GB/CD	10789

Apple® Printers

StylWrt 2200	269
StylWrt 1500/2500	169/209
StylWrt 4100/4500	237/327
StylWrt 6500	449
LsrWrt 8500	2299
LsrWrt 12/640 PS	1069
LsrWrt 16/600 W/Tnr	1579
LsrWrt 12/660Ps Kit	3789

SONY

NEW SONY MONITORS

100ES/100GS	15"	335/365
200ES/200GS	17"	589/649
200PS	17"	789
220vs/17SE2	17"	829/839
400PS	19"	1149
300SF	20"	1149
20SE2	20"	1495
500PS	21"	1649
GDM-W900T	24"	3559

UMAX

C500/200	16/2G/CD/33.6	1095
C600LT/240	24/2GB/CD/33.6	1299
C600VPC/240	32/3GB/CD	1399
C600X/280	32/4GB/CD/33.6	1885
J700L/180	24/2GB/CD/33.6	1689
J700/233	24/2GB/CD/33.6	1839
S900L/200	32/2GB/CD/KB	2289
S900/250	64/4GB/CD/Zip	3299
S900/200 Dual/32/2G/CD		2659
S900/250 Dual/ 64/4g/Raid		6199

NEC

A500/E500	319/379
A700/E700	565/649
P750	739
E1100/P1150	1229/1359

HP HEWLETT PACKARD

DeskJet 720CXI	338
DeskJet 890CXI	439
DeskJet 1600CM	1599
LaserJet 6MP	839
Color LaserJet 5M	4799
LaserJet 4000N	1389
LaserJet 4000TN	1549
LaserJet 4MV	2299
LaserJet 5SI MX	3349
ScanJet 6100C	699
DesignJet PLOTTERS	Call

EPSON®

Perfection 600 Mac	Call
Expression 636 Exec	709
Expression 636 Artist	895
Expression 636 Proff.	1249
Expression 836XL	2099
Stylus Color 600/800	255/365
Stylus PHOTO/1520	348/719
Stylus Color 3000	1649

AGFA

Arcus II Le/Full	1249 /1479
StudioStar LE/Full	749/899
StudioScanlsi Le/Full	459/589
SnapScan 310/600	199/368
EPhoto Digital Camera	279
Dual Scan	Call

UMAX

Astra 610S	159
Astra 1200S Deluxe	239
Astra 1200S w/full Photo	459
PowerLook II Pro	1269
Mirage IISe/II	3159/6689

GLOBAL VILLAGE

Teleport x2/K56	147
Powerport PC	199
Powerport Pro	285
Powerport PCsek	237
Powerport Prosek	339

ViewSonic

15GS 15"	309
15GA-2 15"	365
G771 17"	509
17GA 17"	559
17PS 17"	589
GT775 17"	589
PT775 17"	689
G800 20"	995
P810 21"	1259
P815 21"	1399
G810 21"	1199

WACOM

Art Pad II	129
Artz II 6x8	289
Artz II 12 x 12	399
Artz II 12 x 18	649

TARGA

Targa 2000	2685
Targa 2000 Pro	2899

LinoColor

Lino JADE	469
Lino SAPHIR	1399
SAPHIR Ultra	3299
Lino OPAL	5089
OPAL Ultra	6749

IXMicro

Turbo TV	95
4MB PCI	249
8MB PCI	399

MEGA

ZIP 100mb drive	135
JAZ 1gb drive	359
100mb/1gb	12/79

Nikon

ScanTouch	569
CoolScan II	859
Super CoolScan	1639

NEWTON

2100 8MB	899
2000 5MB,KB	799
2MB / 4MB	69/139
Keyboard	79

RASTEROPS

MC620 17"	499
MC7515 19"	949
MC801 21"	1349
MC801HR 21"	1549

MAC TO GO™

Toll Free! 1-800-946-6221

E-Mail: mactogo@knl.com Customer Service: 310.444.1122 Facsimile: 310.444.1130

Gov't, Schools, Fortune 500 P.O.'s Welcome. * denotes Refurb prod. Visa, MC, AMAX accepted. Prices are Cash Discounted for COD Cash/Cashier Check. Prices may change without notice. Limited stock. All Sales are Final.

CIRCLE 419 ON READER SERVICE CARD

NEC

Silentwriter 1765

- 17 pages per minute
- Ethernet, local-talk & parallel ports for easy networking
- Postscript Level 2
- Advanced paper handling
- Includes toner cartridge

\$1079



POWERMAC 7200/75 LOGIC BOARD

\$149
BRAND NEW!

Logic board with Power Supply... Only \$299.00

TEXAS INSTRUMENTS MICROLASER PRO E



BRAND NEW ... **\$749**

- 600 dpi
- 12 PPM
- Localtalk and Parallel
- Postscript Level 2

LC 580

- 68LC040-33MHz
- 8/800 Config.
- 14" Built-in Screen



\$799
BRAND NEW!
\$949 with Internal 4X CD

NEW APPLE 8X INTERNAL CD-ROMS



UPGRADE YOUR OLD 2X OR 4X CD-ROM DRIVE FOR

Only \$99!!

*mounting kit not included

PowerPort Mercury

GlobalFax software included. Features data transfer speeds of 19.2Kbps and fax speeds of 14.4Kbps. Fastest standard modem available for the PowerBook 520 series

BRAND NEW! ... **\$149**



StyleWriter 1200

- high-quality graphics/text
- 100-sheet capacity
- 720-dpi resolution
- One-year factory warranty

NEW ... **\$149**



Apple 16" Trinitron

- Trinitron picture tube
- Fine 26mm stripe pitch
- 832x624 fixed res.
- 75Hz refresh rate

REFURBISHED ... **\$329**



Personal NT to NTR Upgrade

Turn your Personal NT printer into a Personal NTR with a simple logic board upgrade. The NTR features PostScript Level 2 and a fast RISC processor

NEW W/EXCHANGE ... **\$79**



DuoDock BLOWOUT!

Get an Original Apple DuoDock for your Duo 210 or 230. Upgradable on-board video for large displays. *DuoDock Plus pictured

RECONDITIONED ... **\$299**



Performa 5200

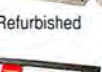
- 75-MHz PowerPC™ 603
- Internal 14.4 faxmodem
- Built-in Display
- Keyboard & mouse

\$899
8/500/4XCD



PowerPC™

Refurbished



Macintosh CPUs

*Performa 635 4/250/	\$499.
**Performa 5200 8/800/4XCD	\$899.
*Centris 650 4/0 (LC040 processor)	\$499.
*Quadra 600w 4/0	\$549.
*Quadra 840w 0/0	\$749.
*Quadra 800 8/0	\$749.
**PowerMac 8500/120 16/1GB/4XCD	\$1599.
*WGS 95 16/700/CD	\$999.
*WGS 8150/80 8/500	\$1499.
*WGS 9150/120 16/1GB/CD	\$1799.

Logic Boards on Sale

*Performa 600	\$129.
*Performa 630	\$199.
*Performa 6200	\$299.
*LC	\$99.
*LC II	\$129.
*Mac IIx	\$129.
*Quadra 800	\$399.
*Quadra 840w	\$449.
*Quadra 950	\$449.

More Logic Board Upgrades

*LaserWriter IIfx/NTX to IIfx	exch. \$399 ntr/299 NTX
*Mac II or IIfx to IIfx	exch. \$249
IIfx to Centris 650	exch. \$299

NuBus Adapters & Misc.

Quadra 600w NuBus Adapter	\$49.
Quadra 610 NuBus Adapter	\$49.
*Quadra 610 DOS Compatibility Card	\$99.

Apple Color OneScanner	\$199.
Apple Color OneScanner 600/27	\$349.
UMAX UC840 Scanner NEW	\$299.
Epson ES-600C NEW	\$349.

Video Cards

E-Machines DoubleColor SX 8-bit NEW	\$99.
RasterOps 24MX NEW	\$199.
Radius PrecisionColor 8/1600 PCI NEW	\$349.
Micron Xceed for Performa	\$299.
**6100 series AV Card with adapter	\$349.
*PowerMac HPV VRAM Card (1MB VRAM)	\$179.
**Apple QuickDraw 3D Accelerator Card PCI	\$199.

Monitors

Apple 14" A/V NEW	\$349.
*Apple MultiScan 17"	\$499.
**Radius IntelliColor Display/20e NICE!	\$1299.
**Hewlett-Packard 17"	\$449.
**Hewlett-Packard 20"	\$649.

Printers

**Apple StyleWriter 1200	\$139.
*Apple LaserWriter 16/600PS	\$1199.
**Apple Personal LaserWriter 300	\$329.
*Apple Personal LaserWriter NTR	\$549.
*LaserWriter IIfx w/5MB RAM	\$749.
*LaserWriter IIfx w/5MB RAM	\$899.

Laser toner cartridges sold separately

* indicates refurbished
** indicates factory refurbished

Products are refurbished unless indicated as "new". Prices reflect a 2% cash discount and are subject to change without notice. Returns are subject to a 15% restocking fee. Not responsible for typographical errors. Refurbished systems may include like-new components and may also include cosmetic blemishes which do not functionally impair performance of the hardware.



PowerComputing

PowerCenter Pro 180 Minitower

- 180-MHz PowerPC 604e • 32MB of RAM, 2GB hard drive • 16X CD • 2MB VRAM • keyboard & mouse • factory refurbished

Low-profile with 16/2GB/16XCD Only \$1599!

PowerBase 240 Minitower

- 240-MHz PowerPC 603e • 16MB of RAM, 1.2GB hard drive • 8X CD-ROM • keyboard & mouse • factory refurbished

PowerCenter Pro 210LP

- 210-MHz PowerPC 604e • 16MB of RAM, 2GB hard drive • 16X CD-ROM • 2MB VRAM • keyboard & mouse • factory refurbished

E-Machines DoubleColor SX

- 8-bit accelerated video
- hardware pan & zoom
- for nubs-based Macs
- virtual screens feature

BRAND NEW ... **\$99**



PowerBook 150

- Refurbished
- 33-MHz '030 processor
- 8MB RAM, 120MB HD
- passive-matrix grayscale

\$699

Performa 6300/100

- 100-MHz PowerPC™ 603e
- internal 14.4 faxmodem
- 15" Apple Display
- keyboard & mouse

\$1099

16/1.2GB/4XCD

Add a 16" Apple Trinitron for only \$100!

PowerPC™

Store high-quality 24-bit images on a removable 2MB data card. 640x480 resolution. LCD display.

QuickTake 200

- Store high-quality 24-bit images on a removable 2MB data card. 640x480 resolution. LCD display.

RECONDITIONED ... **\$449**



ATI XCLAIM VR With TV

- Features QuickDraw 3D RAVE acceleration
- Supports resolutions up to 1152x870
- XCLAIM TV tuner allows your Mac to receive broadcast television signal.

TV OPTION AVAILABLE SEPARATELY FOR \$69.



Javelin Video 3240XL PCI

- accelerated multimedia card for PCI PowerMacs
- 2MB VRAM onboard upgradable to 4MB
- supports resolutions up to 1600x1200 pixels
- Built-in accelerators for video playback, QuickDraw™ and QuickTime™



WITH TV OPTION ... **\$199**

NEW OEM ... **\$99**

POWERBOOK 5300 SERIES

*refurbished units

5300c 8/750	\$1399	5300cs 8/750	\$1149	5300ce 16/1GB	\$1549
100-MHz Active Color		Dual Scan Color		117-MHz Active Color	



MACINTOSH LOGIC BOARD UPGRADES

PowerMac 8100 to 8500/120 (exchange)	\$999
Quadra 950 to WGS 9150 (exchange)	\$999
PowerMac 7200 to 7500/132 (exchange)	\$699
Quadra 800/840 to PM 8500/132 (exchange)	\$1299
Performa 630 to 6300/100 (exchange)	\$499
Performa 6200 to 6300/100 (exchange)	\$249
Quadra 800 to PowerMac 8100/80 (exchange)	\$599
Quadra 660 to PowerMac 6100/60 (exchange)	\$449
Performa 600/IIfx to Centris 650 (exchange)	\$279

MAC ALLY EXTENDED KEYBOARD

- 105-Key w/Numeric Keypad and F-Keys
- Recessed Power Button
- Compare to Apple Extended Keyboard II



\$29!
NEW! NEW! NEW! NEW!

Internal 14.4 faxmodem

For the Performa™ series. Enjoy online services and send/receive faxes!

ONLY \$19
90-day warranty

800, 840, 8100 POWER SUPPLIES

Original factory part from Apple. Brand new.

NEW ... **\$199**

APPLE ADB MOUSE II

The original Apple ADB Mouse II. In stock!

ONLY \$49

800, 840, 8100 POWER SUPPLIES

Original factory part from Apple. Brand new.

NEW ... **\$199**

APPLE ADB MOUSE II

The original Apple ADB Mouse II. In stock!

ONLY \$49

800, 840, 8100 POWER SUPPLIES

Original factory part from Apple. Brand new.

NEW ... **\$199**

APPLE ADB MOUSE II

The original Apple ADB Mouse II. In stock!

ONLY \$49

LC Power Supplies

Original Factory Part! **Only \$39**

REFURBISHED

6100 Power Supplies

Original Factory Part! **Only \$199**

NEW

ORIGINAL APPLE 1.44 FLOPPY

We have original Macintosh floppy drives!

Now \$99 and up

800, 840, 8100 POWER SUPPLIES

Original factory part from Apple. Brand new.

NEW ... **\$199**

APPLE ADB MOUSE II

The original Apple ADB Mouse II. In stock!

ONLY \$49

800, 840, 8100 POWER SUPPLIES

Original factory part from Apple. Brand new.

NEW ... **\$199**

APPLE ADB MOUSE II

The original Apple ADB Mouse II. In stock!

ONLY \$49

WE STOCK MAC PARTS!

1-800-227-3971

• For your protection all credit cards accounts are strictly verified •

FAX (318) 424.9771 • TECHNICAL SUPPORT (318) 424.7987

CUSTOMER SERVICE (318) 424.9791 • PURCHASING/INFORMATION (318) 424.9791

1200 MARSHALL STREET • SHREVEPORT, LOUISIANA 71101

SHREVE
Systems



http://www.shrevesystems.com

CALL THE MAC EXPERTS!

Your one-stop source for everything Macintosh. Complete solutions and expert advice our specialty!

With every system you receive:

- Over 200 megabytes of additional free software
- Deluxe Mouse Pad
- Complete bench-testing before shipment
- 800 line technical support
- Personalized service: no voice mail – ever!



Well Grounded Power

Factory Refurbished PowerBase 180: 180 MHz 603e w/16 Mb RAM, 1.2 gig drive, 15" color display, Descent, Police Quest & Blackthorn games & more! Only **\$1099**, or just **\$44 per month!**



The Have Your Dos and Mac it Too System

PowerMac 7300/180 with Pentium Board! 32 Mb of Mac RAM, 16 Mb of Pentium RAM, 2 Gig hard drive, 12x CD Rom, 15" Color Monitor, Microsoft Windows software. All this for only **\$1999**, or just **\$80 per month!**

Pictures may not match monitor in package



Starmax in your eyes!

Factory Refurbished Motorola Starmax 3000: 200 MHz w/32 Mb RAM, 1.2 gig drive, 15" color display, Ref Apple Color StyleWriter 2400, Descent, Police Quest & Blackthorn games Only **\$1388**, or just **\$56 per month!**



Gee? this is fast!

Macintosh G3 233 desktop, 48 mb RAM, 15" Color Display, Microsoft Office 4.2.1, Astra 610S scanner w/PhotoDeluxe, Microsoft Office w/ BookShelf. Only **\$2688**, or just **\$108 per month!**



Gee? this is even faster!

PowerMac G3 Tower: 266 MHz w/64 Mb RAM, 6 gig drive, 24x CD, internal Zip drive, 17" color display, Astra 1200s Scanner w/PhotoShop 4.0, commercial surge protector. Only **\$3999**, or just **\$152 per month!**



Ramming Speed!

PowerMac 9600: 350 MHz with 128 Mb RAM, 4 gig drive, 24x CD-ROM, 17" PowerMax Trinitron, commercial surge protector. Only **\$5299**, or just **\$190 per month!**

PowerMax Trinitron™ Monitors

Model PM15T 25 mm dot pitch- up to 1280x1024	.....\$359
Model PM17T 25 mm dot pitch- up to 1280x1024	.....\$649
Model PM17TE+ 25 mm dot pitch- up to 1600x1280	.....\$849
Model PM20T 30 mm dot pitch- up to 1600x1280	.....\$1449
Model PM20T+ 25 mm dot pitch!	.....\$1649
NEW! Model PM21T Diamond 30 mm dot pitch	.....\$1299

PowerMax Trinitron™ monitors are designed specifically for the rigorous demands of the Macintosh. They ship complete with Mac-ready cables and adapters, a three year warranty, and our satisfaction guarantee: if the monitor is not just right, we'll replace it for you!



image quality, nice controls – nice monitor!"

MacUser Labs Said:

"Four Mice! A PowerMax Power Play" and "Not only do the PowerMax monitors display good-looking images, but (they) are affordably priced!" and "Nice price, nice

PowerMax External Hard Drives



Everything you need is included!

We customize high-end arrays for all Macs!

•Atto •Micronet
•FWB •Optima

12X External CD Rom	.....\$149
24X External CD Rom	.....\$179
External Jaz One Gig Removable	.....\$349
2x6 CD Recorder w/Toast Software	.....\$399
4x6 CD Recorder w/Toast Software	.....\$569
External 2.0 Gig Samsung 5400 RPM	.....\$269
External 2.0 Gig Seagate 5400 RPM	.....\$285
External 2.0 Gig Quantum 5400 RPM	.....\$312
External 3.2 Gig Quantum 5400 RPM	.....\$355
External 4.3 Gig Quantum 5400 RPM	.....\$419
External 6.4 Gig Quantum 5400 RPM	.....\$529
External 4.5 Gig Seagate 7200 RPM	.....\$699
External 4.5 Gig Seagate 10000 RPM	.....\$819

Over 18,000 Mac items available!

We have so much more than can be listed in one ad! When there is anything Mac you need – just call!

POWER MAX

Knowledge is Power

TradeUp
with
PowerMax!

Turn your old equipment into the latest Macintosh system!

We will take your hard drive (dead or alive – 540 Mb or larger) or Macintosh computer in trade toward the purchase of any product we sell! Call one of our expert system designers for complete details!

Why Buy From PowerMax?

- Most orders ship within 24 hours – even customized systems!
- We speak plain English; you'll talk to an informative, knowledgeable person with no technobabble or high pressure sales tactics!
- We offer flexible terms, and are experts on easy leasing!
- Aggressive purchasing and high volume means low, low pricing!
- We consult with you: we want to make sure what you buy is what you need. We'll probably ask you as many questions as you ask us!
- We're based in Portland, Oregon, where the people are friendly and polite, and where there is no sales tax!

800-613-2072

Local line: (503) 624-1827 • Fax (503) 624-1635
http://www.powermax.com • email: powermax@europa.com

Prices subject to change without notice. Prices reflect cash discount. Credit card orders strictly verified against fraudulent use. With use of credit card as payment customer acknowledges that some products are subject to final sale.

Ask about our complete Apple PowerPC systems with monitor for under \$900!

Customizable Mac Systems	
PowerMac 7300/180 16 Ram/12x/KB	.....\$1249
PowerMac 7300/200 16 Ram/12x/KB	.....\$1399
PowerMac G3 233 32/24x CD/KB	.....\$1788
PowerMac G3 266 32/24x CD/Zip/KB	.....\$2169
PowerMac G3 266 32/24x/Zip/KB	.....\$2649
PowerMac 8600/250 32 Ram/24x/0 Zip	.....\$1799
PowerMac 8600/250 32 Ram/24x/Zip	.....\$1899
PowerMac 8600/300 32 Ram/24x/0 Zip	.....\$2099
PowerMac 8600/300 32 Ram/24x/Zip	.....\$2228
PowerMac 9600/200 32 Ram/12x	.....\$Special!
PowerMac 9600/300 64 Ram/24x/0 Zip	.....\$2988
PowerMac 9600/300 64 Ram/24x/Zip	.....\$3099
Ready-Made Mac Systems	
PowerMac 4400/200 16/1 Gig/8x	.....\$1199
PowerMac 4400/200 PC Compatible	.....\$Call!
PowerMac 6400/200 w/ethernet!	.....\$1249
PowerMac 6500/225 32/3000/33.6	.....\$1488
PowerMac 6500/250 32/4000/24x/56k	.....\$1949
PowerMac 6500/250 48/4000/12x/Zip	.....\$2049
PowerMac 6500/275 32/4000 Creative	.....\$2339
PowerMac 6500/275 32/6000/24x/Zip	.....\$2449
PowerMac 6500/275 48/6000/24x/Zip	.....\$2749
PowerMac 6500/300 64/6000/24x/Zip	.....\$2899
PowerMac 7300/180 Pentium System	.....\$Blowout!
PowerMac G3 233 32/4000/24x CD/KB	.....\$1888
PowerMac G3 266 32/4000/24x CD/Zip/KB	.....\$2269
PowerMac G3 266 32/6000/24x/Zip/KB	.....\$2799

Powerbooks – EVEN LOWER PRICES!! Powerbook 1400, 2200, 3400 and the G3 are all in stock. All accessories and RAM upgrades too!

Umax SuperMac – we stock all models!	
SuperMac C500/200LT 16/2 Gig/8x	.....\$995
SuperMac C500/200 16/2 Gig/12x/33.6	.....\$1095
SuperMac C600/200 16/2.1 Gig/8x/33.6	.....\$1195
SuperMac C600/240LT 24/2 Gig/12x/33.6	.....\$1395
SuperMac J700/180 24/2 Gig/8x/33.6	.....\$1775
SuperMac J700/233 24/2 Gig/24x/33.6	.....\$1995
SuperMac S900/200 32/2.1 Gig/8x/CD	.....\$2495
SuperMac S900i/250 64/4 Gig/24x/33	.....\$3695
SuperMac S900DP/250 64/4Gig/12x +	.....\$6995

We accept educational and corporate purchase orders, and are experts in financing for virtually any size business!



Apple Centris 650

24/230/Ethernet

- 25MHz 68040
- 24MB RAM
- Built In Ethernet
- 3 Nubus Slots
- 230MB Hard Disk
- Used 30-day warranty



- Add Internal CD \$70
- Add Atlantic Tech Speakers \$49
- Add Extended Keyboard \$49
- Add Apple 16" Trinitron \$299

FROM **\$329**



MacWorks 800-482-2705

"Low Prices, Great Service... And A Monkey!"

Voice 913-599-6227 • Fax 913-599-6111

Apple PowerMac 6100 DOS Card Kit

- DOS Included
- All manuals/cables included
- Retail Box
- Full Warranty
- Fits 6115/6116 also
- Windows Available



FROM **\$79**

Daystar Millennium by MacWorks



- MacOS Compatible based on Daystar design
- PowerPC 604 or 604e configs available
- 512K cache
- 6 PCI slots, 7 hard drive bays, 1 Jaz/Zip bay
- 350 watt power supply, 3 internal cooling fans

Millennium 132 0/0/8xCD no video	\$1499
Millennium 150 0/0/8xCD no video	\$1599
Millennium 166 0/0/8xCD no video	\$1699
Millennium 233 0/0/8xCD no video	\$1799
Millennium 400 0/0/8xCD no video	\$1999
Millennium 300G3 0/0/8xCD no video	\$3499

"Fastest Mac Available," Mac Monkey

FROM **\$1499**

APPLE 604 & 604e POWERPC UPGRADE CARDS

for 7300, 7500, 7600, 8500, 8600, 9500 & 9600



PowerPC 604/132	\$49
PowerPC 604e/166	\$99
PowerPC 604e/233	SORRY SOLD OUT
PowerPC 604e/200MP	\$699

FROM **\$49**

SEE OUR WEB PAGE FOR FULL LINE OF PRODUCTS e-mail: sales@macworks.com • web: <http://www.macworks.com/> • Prices Subject to Change • All Prices Represent 2% Cash Discount • We only ship FedEx • *Denotes Refurbished or Used

CIRCLE 421 ON READER SERVICE CARD

800-345-1234

Sales: (310)-398-3300

DATA

Micro Computer Inc.

3847 Grandview Blvd.
Los Angeles, CA 90066

www.datamicro.com

Fax: (310)-391-2488

Dealers & International Sales Welcome

e-mail: datamicro@earthlink.com

PowerMacs

6100/66 8/500CD	\$699
6100/DOS 16/500CD	\$899
4400/200 16/1GB/CD	\$1085
6500/225 32/3GB/CD	\$1449
6500/250 32/4GB/CD	\$1739
6500/275 Creative Studio	\$2149
6500/275 32/4GB/CD/Zip	\$2249
7200/120 16/1GB/CD	\$1149
7300/180 16/2GB/CD	\$1359
7300/200 32/2GB/CD	\$1549
7600/132 16/1GB/CD	\$1449
8500 & 9500 Series	CALL
8600/250 32/4GB/CD/Zip	\$2189
8600/300 32/4GB/CD	\$2489
9600/233 32/4GB/CD	\$2689
9600/300 64/4GB/CD	\$2989
9600/350 64/4GB/CD/Zip	CALL
G3/233 32/4GB/CD	\$1869
G3/266 32/4GB/CD/Zip	\$2199
G3/266 32/6GB/CD/Zip/AV	\$2779

PowerBooks

1400es/133 16/1GB/CD	\$1849
1400e/133 16/1GB/CD	CALL
1400e/166 16/2GB/CD	\$2249
2300e 8/750	\$999
2300e 20/1GB/Modem	\$1399
2400e/180 16/1.3GB	\$2789
3400e/180 16/1GB/CD	\$2689
3400e/200 16/2GB/CD	\$2569
3400e/240 16/3GB/CD	\$3489
G3/250 32/5GB/CD	\$5299

Call for Software & Accessories not listed

UMAX® SuperMac

500/600/700 Series	CALL
C600LT/240/24/2GB/CD/M	\$1349
J700/233/24/2GB/CD/M	\$1849
S900L/200 32/2GB/CD	\$2295
S900i/250 64/4GB/CD/Zip	\$3299

Performas

6116 8/700/CD	\$695
6116/DOS 16/700/CD	\$895
5200 8/500/CD/15"	\$795
6200 8/1GB/CD	\$649
6360 16/1GB/CD	\$895
6400/180 16/1GB/CD	\$969
6400/200 32/2.4GB/CD	\$1095

Printers

LaserWriter 16/600	\$1489
LaserWriter 12/660	\$3495
LaserWriter 360	\$995
StyleWriters	Lowest Price.
HEWLETT PACKARD LJ. 55IMX	\$3389
LaserJet 4000	\$1495

Scanners

Agfa Arcus II	\$1475
Agfa Studio Star LE	\$689
UMAX PowerLook II	\$1249
EPSON Stylus 3000	\$1649

Monitors

Apple MultiScan 14"	\$229
MultiScan 15"	\$299
1705 (17")	\$599
MultiScan 20"	\$1475
radius 15" Grayscale	\$199
Pivot 15" Grayscale	\$295
20" Grayscale	\$695
17" Color	\$645
IntelliColor 20"	\$1099
Precision 21" Color	\$1495

ATI, LSI, Microtek, DayStar, Products in stock. Call for Best Price.

DIGITAL

Media 100qx	\$2195
Bravada 1000	\$629
Targa 1000PCI	\$1789
Targa 2000PCI	\$2698
IX Micro Twin Turbo SMB	\$595
Kodak DC 25	\$459
Kodak DC 50	\$859
Apex 4.6 Optical Drive	\$1685
Raid Array Hard Disks	CALL

We Specialize in Business Leasing

Prices are subject to change without notice!

Government, Universities & Corporations P.O.s are accepted

CIRCLE 408 ON READER SERVICE CARD

**THE BEST IN
REMANUFACTURED
Macintosh
COMPUTERS & PARTS**

- GENUINE APPLE PRODUCTS AT BIG SAVINGS
- "LIKE NEW" REMANUFACTURED SYSTEMS & PERIPHERALS
- EXCHANGE REPAIR & STOCKING PARTS
- 180 DAY LIMITED WARRANTY
- WE BUY YOUR SURPLUS APPLE PRODUCTS

**Pre-Owned
Electronics**

1-800-274-5343

Offices: 781-778-4600 Fax: 781-778-4848
128 MIDDLESEX TPK, BEDFORD, MA 01730
D176019

CIRCLE 425 ON READER SERVICE CARD

Best Prices! Lifetime Warranty!

DIMMs

32mb \$ 64 168 pin 64mb \$120

SIMMs

16mb \$28 72 pin 32mb \$ 54

All prices are subject to change. Limited to stock on hand.

www.macsolutions.com

(800) 873-3RAM

Tel: (310) 966-4444 Fax: (310) 966-4433

CIRCLE 418 ON READER SERVICE CARD

Best Prices

RAM Modems Drives & More

Baber Information Services, Inc.
<http://www.baber.com/mac/>

800-290-0189

CIRCLE 401 ON READER SERVICE CARD

A&R COMPUTING 1225 West 4th Street Suite 400 Austin, TX 78703

memory

1-800-832-8802
CALL FOR CURRENT BEST PRICES

all items are new!

TOP quality!

OUR PRICES ARE THE BEST. NO MATTER WHAT'S BEEN ADVERTISED IN THIS MAGAZINE!

WE CARRY 63 MEMORY!

shipping from \$5

lifetime warranty!

prices subject to change

www.anrweb.com

VISA • Mastercard • Discover

NO SURCHARGE FOR CREDIT CARDS

MC 9-7PM SAT 10-5PM CST

**Specializing in Rebuilt Imagesetters complete
PrePress Systems and Digital Video**

3101 WPCB suite 150
Newport Beach Ca 92663

800-429-7779 • phone 714- 574-3939 • fax 714-574-3947
email: CLucero126@aol.com

www.DigitalRealityint.com

Pre Press System **SilkScreening System**

Complete Color Pre Press System

Includes Power Mac 7500
24/16, 17" Color Monitor,
Software, Ex Keybd., AGFA
Color Scanner, Color Proof
Printer, Imagesetter w/Rip
& Processor.

\$16,950

Imagesetter - Agfa or Linotype 18" Wide

Includes RIP
• Adobe Postscript
• 2400 DPI
• Factory Refurbished
• Call for New & Refurbs

\$15,000

Spot Color System

**COMPLETE SYSTEM FOR SPOT
COLOR**

Includes Power
Mac 7500
24/16, 17" Color
Monitor, Software,
Ex Keybd., AGFA
Color Scanner, Color Proof Printer,
Imagesetter w/Rip & Processor.

Call!

AGFA • Linotype • ECRM • Ultron • Scitex • MACINTOSH

Scitex Station

PM 9600/300/128MB/3GB/CD/ATI
Targa 2000, Microsphere
v1.4, CG Option, 17" Color
Monitor, Ext. Keyboard,
18GB Disk and much more!

Call! MicroSphere

**Adobe
Howtek Drum
Flatbed
Proofing Printers**

Fargo • Epson

AVID® MCKXPRESS MAC

MCKXPRESS Workstation for Macintosh
SYSTEM INCLUDES: Real Time
effects, country kit 110v, beta-
cam video, avid standards
effects, Single Channel Controlle
2 Channel Audio, Film Option,
Deck Control, & 3D. Note:

Options not included **Starting at 9,995**

Media 100LX Station

MEDIA 100 9600/300MHz 128MB/2G/CD
After Effects 3.0, 17" Monitor,
Keyboard, 4100 w/SCSI Wide Array,
Vicent Component, Batch

Starting at 14,900

DRIVES

MEMORY

Quantum **3/5 Year Warranty!**

**2.1Gig
Stratus**
5400rpm/10ms Ultra SCSI 3

\$225
ST32150

3.2 GB Stratus	10ms	5400	US3	ST33324	\$299
4.3 GB Stratus	10ms	5400	US3	ST33432	\$349
6.4 GB Stratus	10ms	5400	US3	ST33648	\$449
4.5 GB Atlas II	8.0ms	7200	US3	ALS3455	\$595
9.1 GB Atlas II	8.0ms	7200	US3	ALS34550	\$855

Seagate **5 Year Warranty!**

9.1 GB Barracuda	8ms	7200	F32	ST19171N	\$889
4.5 GB Cheatah	8ms	10000	US3	ST34501N	\$795
23 GB Elite	8ms	10000	US3	ST423451N	\$1995

IBM **5 Year Warranty!**

9.1 GB UltraStar	8.5ms	7200	US3	IBM91US	\$789
9.1 GB UltraStar WIDE	8.5ms	7200	US3W	IBM91USW	\$799

MICROPOLIS **5 Year Warranty!**

2.1 GB	9ms	5400	US3	MC4321	\$229
4.5 GB	7.9ms	7200	US3	MC4345	\$695
9.1 GB	8.5ms	7200	US3	MC3391	\$849

Western Digital **5 Year Warranty!**

2.1 GB Enterprise	8ms	7200	US3	WDE2170	\$269
4.3 GB Enterprise	8ms	7200	US3	WDE4360	\$799

PROCESSOR UPGRADES

PPC604e 180Mhz	\$279
PPC604e 200Mhz	\$359
PPC604e 225Mhz	\$429
PPC604e 233Mhz	\$469
PPC604e 240Mhz	\$499
PPC604e 250Mhz	\$539
DUAL 604e's 400Mhz	\$799
DUAL 604e's 450Mhz	\$899
DUAL 604e's 500Mhz	\$1099
G3* 250Mhz w/128K/2/125Mhz	\$1299
G3* 266Mhz w/1MBL2/177Mhz	\$2199
G3* 250Mhz w/1MBL2/250Mhz	\$2399
G3* 275Mhz w/1MBL2/275Mhz	\$2999

**SOURCE
TECHNOLOGIES**

800-900-4599
<http://www.sourcetechtechnologies.com>
Voice 954-725-9777 • Fax 954-725-9777

All products feature a 30 day money back guarantee. All memory products are brand new and carry a limited lifetime warranty. Government and educational PO's are welcome. No surcharges on credit cards. Prices are subject to change without notice! Free FedEx Shipping is a limited time offer - restrictions apply!

***FREE FEDEX SHIPPING!**

LIFETIME WARRANTY!

SIMMS 72 Pin 60/70ns

4MB	\$15
8MB	\$27
16MB	\$47
32MB	\$97

DIMMS 168 Pin /EDO 3.3

8MB	\$15
16MB	\$27
32MB	\$47
64MB	\$97

30 PIN SIMM 60/70ns

1MB	\$9
2MB	\$14
4MB	\$20
16MB	\$71

POWERBOOK RAM 500/5300/190

4MB	\$45
8MB	\$57
16MB	\$87
32MB	\$149
48MB	\$239

PB 1400/2400/3400...INSTOCK!!...SCRAM!!

L2 CACHE

256k-61/71/81xx	\$13
256k/512k-72/73/75/76/85xx	\$45
256k/512k-44/54/64/65xx	\$59/79
1MB-61/71/81xx	\$125
1MB-72/73/75/76/85/8	\$155

VRAM

256k/512 VRAM Q/C/71/8	\$13/19
1MBPowermac	\$21
2MB/4MB ATI/STARMAX	\$55/75

LOWEST PRICES GUARANTEED!!!

CIRCLE 403 ON READER SERVICE CARD

Sonnet Smashes Power PC Prices!

Crescendo Processor Cards



The Sonnet Crescendo™ Power PC™ processor upgrade cards are the most reliable, most cost-effective upgrades

available. Modernize your Power Mac 7300, 7500, 7600, 8500, 8600, 9500, 9600, SuperMac J700 or S900 series. These power-packed upgrades are 100% compatible. Add multiprocessing for super-fast Adobe Photoshop, Premier, AfterEffects, and 3-D rendering. Add 1MB cache & double performance! MP multiprocessing by Daystar Digital. Resellers call.

132MHz 604 \$49
200MHz 604e \$299
233MHz 604e \$399
240MHz 604e \$449
G3 \$Call
360MHz 604eMP \$599



Accelerate Mac LC, LC II, Color Classic, IICI, IISI, IIvX, IIvI, IIX, IICX, or Performa 600 to '040 Speed \$149-\$299

Sonnet Presto™ LC 040 50/25 MHz accelerators increase Mac LC, LC II, or Color Classic performance 500% as fast as a stock machine. Use RAM Doubler or Virtual Memory and break the 10MB barrier (except Mac LC).

Presto LC is \$149, with FPU \$199.

Run System 8! The 80/40MHz version for the Mac IICI, IISI*, IIvX, IIvI, IICX*, IIX* or Performa 600 increases processor performance up to 500%. The 80/40 MHz Presto at only \$199 includes 128K level 2 cache, or \$299 with FPU too. (*Adapter required)

Prestos are 100% software compatible and run Systems 7 or 8 (LC, IIX, IICX Sys7 only). Prestos are easy to install in Macs' processor direct slot.

33 MHz 68030 Allegros Accelerate Mac SE, SE/30, II, LC, LC II Color Classic from \$99



The Allegro™ LC for the Mac LC, LC II, Color Classic doubles your cpu speed, adds 16K level 2 cache and includes an FPU—all for only \$99! The Allegro SE increases performance 460%, includes an FPU and 4 SIMM slots to expand memory up to 16MB for a bargain \$199. Allegro Mac II, SE/30 are \$99.



Power Mac 6100/7100/8100

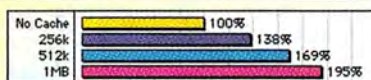
Performa 611X

604 100-120MHz \$199
604e 200-233MHz \$499

Sonnet Crescendo™ accelerators speed a Power Mac 6100, 7100, 8100 or Performa 611X to run as fast as the Power Mac 9600! Upgrade the tired PowerPC 601 processor in a 6100/Performa 611X to an autoconfig 100-120 MHz PowerPC 604 CPU for only \$199. Upgrade a 6100, 7100, or 8100 to an autoconfig 200-233 MHz 604e at \$499. The Crescendo upgrades plug into the PDS slot for easy user installation. Run System 8 faster than you ever thought possible for a fraction of the cost of a new machine. Resellers call.

Wow!

Cache Speeds!



A Power Mac with 1MB cache runs twice as fast as cache-less (200MHz 604e, MacBench 4). A cache card is the most cost-effective performance upgrade you can make. We build 'em and have the lowest volume prices. Resellers call.

256K	6100/7100/7200/7500/8500	\$49	5260	\$99
512K	7200/7300/7500/7600/8500/8600	\$69		
1M	6100/7100/7200/7300/7500/7600/8100/8500/8600	\$149		
256K	4400/5400/5500/6360/6400/6500/StarMax	\$65		
512K	4400/5400/5500/6360/6400/6500/StarMax	\$95		
1M	4400/5400/5500/6360/6400/6500/StarMax	\$199		

Run System 8 on a Quadra Twice as Fast!



\$199-\$299

Plug the Sonnet QuadDoubler™ into a Quadra 610, 660w, 700, 900, or Centris 610*, 660w, 650 and run virtually twice as fast as before for only \$299. The QuadDoubler is System 8 compatible! Just plug the QuadDoubler into your CPU socket and power up your Mac. A CPU extraction tool is even included to simplify installation. The QuadDoubler includes a Floating Point Unit for superfast rendering or calculations. *The Centris 610 QuadDoubler runs at 80/40 MHz and is value-priced at \$199.

Add Math Coprocessor to 68040 Macs & PowerBooks



Give your Quadra, Centris, or PowerBook 520/540 a math coprocessor for internet file decompression, rendering, or Photoshop. 25MHz 68040 \$125*, 33MHz 68040 with heat sink \$169*. Add a full 66/33MHz 68040 with FPU to your PowerBook 520 or 540 for \$199*. This also speeds 520 to 66/33MHz. Call for PB190, Duo280 FPU. *68LC040 trade-in req'd.



SONNET SONNET TECHNOLOGIES, INC.
 18004 Sky Park Circle, Irvine, California 92614
 714-261-2800 Fax 261-2461 sales@sonnettech.com

800-786-6260
<http://www.sonnettech.com>



VISA and MasterCard no surcharge. We used to have a surcharge; we don't anymore. Government, corporate and education P.O.s welcome. Lee Ann manages the customer service team. She believes in putting our customers first and carries a smile wherever she goes. One year limited warranty on all products. If you step on it and break it we limit the warranty, otherwise we don't limit it too much. All returns require an authorization and are subject to a restocking fee. ©1998 Sonnet Technologies, Inc. Sonnet, the Sonnet Logo, Allegro, Crescendo, Presto, and QuadDoubler are trademarks of Sonnet Technologies, Inc.

Memory & Upgrades
Services Repair • Data Recovery

Macworld
SHOPPER

MEMORY

64MB DIMM

\$159

**WWW
MEMORY-TECH
COM**

see our site for
latest price listing

We Manufacture **MEMORY**

**BUY DIRECT!
SAVE
MONEY!**

DIMMS 5v / 3.3v

32MB \$88 / \$88

64MB \$180 / \$176

SIMMS 72pin SIMMS 30pin

16MB \$48 4MB \$15

32MB \$72 16MB \$50

PowerBooks

3400-32MB \$195 1400-24MB \$167

190-24MB \$160 5300-16MB \$100

G3-32MB \$88

Prices are subject to change

Visit our Website for
Complete Up-to-Date Price List
www.apcom.com/acl
www.cybertechmall.com/kpo

ACL, INC. 2155 Bering Dr., San Jose, CA 95131

800-888-0348

CIRCLE 400 ON READER SERVICE CARD

MAC REPAIR & UPGRADE

24 HOUR SERVICE TURNAROUND • LONGER WARRANTY
FREE DIAGNOSTIC • COMPETITIVE PRICE



**DT & T
MACINTOSH
SERVICES, INC.**

800-622-7977

720 East Evelyn Ave., Sunnyvale, CA 94086 • Tel: 408-720-9899 • Fax: 408-720-9459
<http://www.dtttservice.com>

* Specialize in component repairs:
• Power Mac • Power Book • Logic boards

* Advance Exchanges

MEMORY

"Computer Show" Prices Everyday!

Mohawk Memory Co., Inc.

SIMMS • DIMMS • EDO • ECC •
VRAM • CACHE • PRINTER •
SDRAM • POWERBOOK

Fax: (978) 897-0009
Email: simdint@mohawkmem.com
Webstore: www.mohawkmem.com
16A Waltham St. Maynard MA 01754
Visa MC Discover AMEX PO's O.A.C.

1(800) 986-6429

Good Old-Fashioned New England Service



DATA RECOVERY: 800-440-1904

7 good reasons to choose DriveSavers:

1. We're the most trusted and respected data recovery specialists.
2. 24-hour, onsite, and weekend service available.
3. Proprietary techniques so advanced we retrieve data others might simply abandon.
4. Over 12 years of Macintosh data recovery experience.
5. Certified to maintain most drive warranties.
6. Featured by CNN, NextStep, BBC, C-Net, Forbes.
7. All storage devices; Mac OS, DOS, Win95, WinNT, OS/2, UNIX, Sun, SGI, Novell.



©1997 DRIVESAVERS, INC.

Clip and save this ad. Visit DriveSavers at: www.drivesavers.com

DRIVESAVERS, INC. 400 BEL MARIN KEYS BLVD., NOVATO, CA 94949, INTL: 415-382-2000, FAX: 415-883-0780

CIRCLE 443 ON READER SERVICE CARD

DMS MAC & PC MEMORY

LIFETIME REPLACEMENT GUARANTEE ON MEMORY PRODUCTS

UMAX **GLOBAL VILLAGE COMMUNICATION** **FOCUS enhancements** **i** **ALPS**

Data Memory Systems
24 Keewaydin Dr.
Salem, NH 03079
Tel: 603-898-7750
Fax: 603-898-6585
E-mail: sales@datamem.com

**•SIMMS •DIMMS •SDRAM •VRAM
•EDO Memory •CACHE
•Printer Memory •Modems
•Network Products
•PowerBook & Notebook Memory
Upgrades**

Hubs & Connectors

Mac & PC to TV

NewerTECH

**28.8Kbps
33.6Kbps
56Kbps!**

x2 56Kbps

iomega Zip & Jaz Drives

**Zip & Jaz
Drives & Disks**

**DMS
WILL NOT
BE
UNDERSOLD
ON MEMORY PRODUCTS**



ORDER ON-LINE 24 HOURS @ <http://www.datamem.com/macworld>

CALL 1-800-662-7466 TOLL FREE

University, Government & Corporate P.O.s with Approved Credit

MAC REPAIR

Mac Shop Northwest
WWW.MACSHOP.COM
 • Apple[™] Certified Technicians
 • One-Day Service Turnaround*
 • Hard Disk Repair & Data Recovery
 • Up to 75% below Dealer Rates
 • Component-Level Repairs
 • Expert Advice and Prices by Phone
 • Power Supplies & Logic Boards*
 • Lifetime Repair Warranty*
 Tel: 1-503-642-3456
*on many repairs. Visa/MC/AX. Fast overnight shipping available. We use genuine Apple[™] parts.

1-800-MAC-SHOP

CIRCLE 448 ON READER SERVICE CARD



Free Shipping
 Call for details

Digital Output
 Overnight
 PC or Mac

Send PC/Mac files by FTP or Priority Air Express to Imagers and for most output services, your finished work is in your hands the very next morning.

FILM SCANNING



Improved Pro scans from 35mm to 4x5 formats are \$8 each and 35mm scans to the Master Photo CD are \$.90. Great for print, posters, & NewMedia uses.

BIG COLOR POSTERS

DisplayMaker

Photo quality posters for presentations, retail, & transit...as low as \$6 per sq.ft.




Digital Production Center
 INFO & QUOTES on the web
800.672.7029/404.351.5800
 1575 Northside Dr. Ste. 490 Atlanta 30318
www.imagers.com

CIRCLE 442 ON READER SERVICE CARD

WE SPECIALIZE IN WHOLESALE WATERLESS COLOR PRINTING

1000 FULL COLOR BUSINESS CARDS FOR \$100 Sug. retail price \$179
1000 FULL COLOR POSTCARDS FOR \$149 Sug. retail price \$249

Printed waterless at 300 line screen from your computer files on Super Premium 10pt. Kromekote with our FREE scratch-resistant aqueous coating.



Renewable Energy Products
NORTHWEST ENERGY STORAGE
<http://www.nwes.com>
 800-718-8816 • 208-263-6142 • FAX 208-265-3677
 P.O. BOX 137, Colburn, ID 83865

Save Money!
 Upload Your Files
 to Our FTP Site at
<ftp.copycraft.com>

- BUSINESS CARDS
- POSTCARDS
- CD INSERTS
- CD TRAY LINERS
- BROCHURES
- BOOKLETS
- NEWSLETTERS
- POSTERS & MORE



Randall C. Burleson
 REALTOR[®]

Off. (806) 793-4703 • Pager (806) 740-5164 • Home (806) 799-4034
 4401 S. Loop 289, Lubbock, TX 79424 • <http://www.mcdougal.com>

FEATURING 300 LINE SCREEN WATERLESS OFFSET PRINTING

Rates for Brochures, Booklets and Flat Sheets are also available.

4-COLOR WATERLESS SPECIAL	5,000 5.5 x 8.5 Booklets 5.5" x 8.5" 8-Page 4-Color Booklets printed from your files on 80 lb. gloss text. Prices include full bleed, folding and Free Aqueous Coating. SIMILAR SAVINGS ON OTHER SIZES AND QUANTITIES	\$1689 <small>SUGGESTED RETAIL \$2699</small>
----------------------------------	---	---

The Data Recovery Experts.

When it comes to recovering your critical data, bigger is better.

- Experts on every operating system and storage media.
- Calls answered 24-hours a day, everyday.
- Emergency & onsite services.

Ontrack

800-872-2599

www.ontrack.com
 Mpls • LA • San Jose • DC • London • Tokyo • Stuttgart
©1997 Ontrack Data Recovery, Inc.

CIRCLE 445 ON READER SERVICE CARD

GREAT COLOR AT A GREAT PRICE.

\$65 1000 Full Color Business Cards 4/0, 3.5"x2", 10 pt. Kromekote CIS	\$150 1000 Full Color Post Cards 4/0, 8"x5", 10 pt. Kromekote CIS
--	---

CALL FOR GREAT PRICES ON SHORT-RUN, FULL COLOR 8.5x11 FLYERS AND CATALOGS.

Other Services: Film Output (up to 30x40; \$45@8.5x11; film + Color Key); Rainbow (\$20@11x17); Fiery (\$6@8.5x11); NovaJet Poster (up to 50" wide, \$6/sq. ft.); Drum Scan (\$20@8.5x11).

Diskcom Graphics ----- **888-20UTPUT**

All prices exclude shipping and tax. Price subject to change without notice. Printing prices require customers' composed files on disk.

CIRCLE 441 ON READER SERVICE CARD

GRAPHIC ARTS
 AVAILABLE



PRINTERS, INC.

4413 82nd Street • Lubbock, TX 79424 • FAX: 806.794.1305

QUARK
 Authorized
 Service Bureau

FedEx Authorized
 COREL
 Service Bureau

Email your requests for printing quotes to request@copycraft.com

1.800.794.5594

CALL TODAY FOR A FREE COPY OF OUR NEW FULL COLOR CATALOG

Visit <http://www.copycraft.com> for more 4-Color Specials!

CIRCLE 440 ON READER SERVICE CARD

PROFESSIONAL DATA RECOVERY SERVICES.

Hard Drives, Floppy Drives, Syquest,
EZ-135, ZIP, JAZ, Optical & Bernoulli.

TOTAL RECALL
THE DATA RECOVERY COMPANY™



800-743-0594 VISIT US AT www.recallusa.com

2462 WAYNOKA ROAD • COLO. SPRINGS, CO 80915 • TEL (719) 380-1818 • FAX (719) 380-7022

CIRCLE 446 ON READER SERVICE CARD

Data Recovery in hours.

- Over 10 years of experience with clients worldwide including Apple, NASA, HP, and FedEx.
- We've recovered more than half-a-million megabytes of Mac Data alone.
- You only pay when there's a recovery.
- Express One-Day Service is available.
- Call 24 hours a day.



LAZARUS
DATA RECOVERY

Working at the speed of business.

800-341-DATA

415-495-5556 • FAX 415-495-5553 • RESTRICTIONS MAY APPLY
381 Clementina Street • San Francisco, California 94103

CIRCLE 444 ON READER SERVICE CARD

DIRECTORY

DIRECTORY CONTACTS 800.825.4237

ADVERTISING REPRESENTATIVES

Spencer Frasher sfrasher@zd.com x5864
Michelle LeWinter mlewinter@zd.com x5122
Kristin Newman knewman@zd.com x5862
Jessica Turko jturko@zd.com x5140

ADVERTISING SALES MANAGER

Monika Kelly mkelly@zd.com x5155

ACCOUNTING SOFTWARE

COMPLETE BUSINESS SOLUTIONS

One-stop shop for hardware, software, financing and services for any size business. Our accounting programs range from basic to sophisticated multi-user systems plus Point of Sale, Inventory, Invoicing and Payroll packages. Call for a catalog or e-mail us at info@maxworld.com.

MAX COMPUTERS • (800) 656-6299

1506 25th Street, San Francisco, CA 94107
<http://www.maxworld.com/accounting> • Fax (415) 695-0257

CIRCLE 465 ON READER SERVICE CARD

ACCOUNTING/POS SOFTWARE

DB:\$ RETAILER'S ADVANTAGE™

POINT OF SALE • ACCOUNTING & MORE

Full demo available for fast POS/Inventory Management
Single or Multiple User(s) and Store locations
Includes POS, Order Entry, Receivables, Inventory, PO, Payables

DB:SOLUTIONS, INC.

929 Sir Francis Drake Blvd. C-238 Kentfield, CA 94904
www.posbydbs.com • eMail: slaes@posbydbs.com
Toll Free: 888/461.9501 TEL: 415/461.9500 FAX: 415/461.9500

CIRCLE 472 ON READER SERVICE CARD

CD ROM

CD-ROM Production Services

- All formats: Mac, ISO, Hybrid, Mixed Modes
- Premastering, beta testing, or archiving
- Mass Replication available, any quantity
- Personal, Knowledgeable Service for 10 Years!
- Certified Apple Developer • Low prices/fast delivery

NORTHEASTERN DIGITAL RECORDING

2 Hidden Meadow Ln, Southboro, MA 01772
508-481-9322 Fx:508-624-6437 CDNDR@aol.com

CIRCLE 466 ON READER SERVICE CARD

COMPUTER INSURANCE

INSURES YOUR MAC

The Computerowners' insurance policy repairs or replaces hardware, media and purchased software. \$49 a year covers up to \$2,000 of equipment against theft, fire, accidents, power surge, natural disasters and more! \$50 deductible. Call for immediate coverage or information. 1-800-800-1492.

SAFEWARE, The Insurance Agency, Inc.

5620 N. High Street, PO Box 656
Columbus, Ohio 43085

CIRCLE 467 ON READER SERVICE CARD

DISK DUPLICATION

CD-ROM MASS-REPLICATION

- Quantities from 500 discs to 10,000,000 +
- ISO 9000-certified manufacturing
- Complete, innovative printing & packaging: cardboard, Tyvek®, & jewel-box packaging options available.

OASIS® DUPLICATION

micah@oasiscd.com • 800/697-5734
Fax 540/675-2500 • Flint Hill, VA 22627

CIRCLE 468 ON READER SERVICE CARD

DRIVE SALES & REPAIRS

FLOPPY DRIVE REPAIR & SALES

Mac 3.5" 400k, 800k, & 1.44 MEG (Repair) . . . \$40.00
Advanced Exchange From \$40.00
New & Refurbished Hard Drive & Floppy Drive Sales. Call Price includes most parts, cleaning & alignment. 1yr warranty on repair, 2yrs on new drives. Schools & Gov't. PO's accepted. Expert Data Recovery.

UPTIME COMPUTER SUPPORT SERVICES

<http://www.scvnet.com/~uptime> • 23633 Via Primero
Valencia, CA 91355 • 805-254-3384 • Fax 805-254-1950

CIRCLE 469 ON READER SERVICE CARD

GENEALOGY SOFTWARE

REUNION® 5- New upgrade!

"SPECTACULAR" ★★★★★ MacWorld, 1/98. Sound & video, Web publishing, drag-and-drop editing. Unlimited individuals, events, facts and sources. Create large wall charts: Ancestor and Descendant, plus new Relative and Timeline charts with photos - great for family reunions. To order, call MacWarehouse 800-255-6227. Visit our Web site: www.LeisterPro.com

LEISTER PRODUCTIONS, INC.

P.O. Box 289 Mechanicsburg, PA 17055
tel: (717)697-1378 • e-mail: info@LeisterPro.com

RELIGION

Bible Study on Disk or CD-Rom

Full Featured. Fast & Friendly Bible study software. As the leader in Bible study software since 1981 we have continued to listen to our customers and provide them with the tools they need. Call for a FREE catalog. <http://www.brs-inc.com/bible>

BIBLE RESEARCH SYSTEMS

2013 Wells Branch Pkwy. #304, Austin, TX 78728
(800) 423-1228 (512) 251-7541

CIRCLE 471 ON READER SERVICE CARD



ON MARCH 16—20, YOU'LL GET
THE CHANCE TO DO SOMETHING YOU'VE
ALWAYS WANTED TO DO...



SEYBOLDNY
SEMINARS

PUBLISHING 98

BUILD YOUR OWN PUBLISHING EMPIRE.



Seybold HotWired Internet Publishing

An entirely new conference program focused on cutting-edge Web tools and technologies.

Publishing Systems@Seybold

The definitive conference for advancements in print, graphics, prepress and digital imaging.

Special Interest Seminars

One-day comprehensives on the state of the industry for Internet, print and photography.

Internet/Prepress Tutorials

Half- and full-day courses providing expert training on publishing's leading tools.

3-Day Product Exposition

300+ top companies displaying the latest publishing hardware, software and services.

An advanced Web publishing conference and the world's foremost print publishing conference can now be found in one complete event: Seybold Seminars New York. From prepress to print, graphics to the Web and Internet, Seybold Seminars brings traditional publishing expertise together with revolutionary new Internet/Web and publishing technologies. The result is a five-day information download you can use to communicate with your markets more efficiently than ever before. Whether you publish on cyber or fiber, take advantage of a full week of learning programs designed just for you. Call us today or visit our Web site for your free exposition pass and a Program Guide.



SEYBOLD SEMINARS
PUBLISHING 98

MARCH 16 — 20, 1998
EXPO: MARCH 17 — 19
THE JACOB JAVITS
CONVENTION CENTER
NEW YORK, NEW YORK

FREE PASS | WWW.SEYBOLDSEMINARS.COM | 888.800.8922 | +1.650.372.7072

continued from page 186

undergrads couldn't use with Macs today," Updegrove says.

Since Updegrove won't provide any plausible explanation for his crusade, let me offer one: Updegrove realized that in an all-Windows world he could be the most important man on campus. Furthermore, if the Gartner Group's cost studies are correct, Yale will have to double its funding and staffing of Updegrove's department just to keep those Windows machines running. As Kiran Wagle wrote to the school paper, people like Updegrove "depend on the preponderance of Windows. If the Mac OS held 90 percent of the market, people like Daniel would be on the dole queue."

One-Man Crusades

Updegrove, by the way, claims his letter was misinterpreted. "It is not, and never has been, the University's intent to become an 'all-any-operating-system campus,'" he wrote me.

I must admit I sprayed my Sprite when I read that. Not his intent!? Then why did he write *The Letter*? Why did his Web site give such Borg-like instructions

to faculty as: "Departments should develop a Windows migration plan before June 2000"? And above all, why won't he change his official mind about freshmen bringing Macs?

Misinterpretation or not, the migration is underway, and it's not pretty. "We've had a lot of trouble supplying computers to students," says a Yale computer store staffer. "HP won the bid to supply Windows machines to students, but they arrived late and with no software on them; several were DOA. So we spent several Saturdays installing memory and software. We had a bunch of unhappy students, and a couple still don't have their computers. There's now a two-week wait for service."

I don't mean to dump on Updegrove. Well, not *just* on him, anyway. After all, similar phaseouts are underway at Stanford and Brown. But the Yale case illustrates perfectly how Mac phaseouts go, whether on campus or at corporations. They are always orchestrated by a single person in a position of power who's willing to steamroller any opposition.

Unfortunately, such personal agendas come at a tremendous cost. Creative people lose their favorite tool. Apple gets

terrible press. And because Windows machines cost far more to support than Macs, the result is higher costs for the companies and universities.

Worse, Apple either can't or won't fight back, even for crown jewels like colleges. "We're not going to respond publicly, and we're not going to make huge donations," says Apple's education spokesman, John Santoro. "But we are going to do two things: build better products than the competition and show some black ink." I don't know; when the nut is as hard to crack as Updegrove, I doubt the build-it-and-they-will-come ploy will work.

Fortunately, enlightenment still prevails at most schools. "It is not in the interests of a leading institution to dictate computing platform," says Jose-Marie Griffiths, Updegrove's equivalent at the University of Michigan. "To limit choice of selection limits opportunity and, ultimately, limits achievement."

I hope Daniel Updegrove visits the University of Michigan someday. He might learn something. **m**

DAVID POGUE (www.pogueman.com) is the editor of *The Microslath Joke Book* (Berkley, 1997).

March 1998, Volume 15, Number 3 Macworld (ISSN 0741-8647) is published monthly by Mac Publishing, L.L.C. Editorial and business offices: 501 Second St., San Francisco, CA 94107, 415/243-0505. Subscription orders and inquiries should be directed to 303/665-8990. Subscription rates are \$27 for 12 issues, \$54 for 24 issues, and \$81 for 36 issues. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$18 per year for postage for Canada and Mexico subscribers. Add \$69 per year for postage to all other countries. Periodicals postage paid at San Francisco, California, and at additional mailing offices. Postmaster: Send address changes to Macworld, P.O. Box 54529, Boulder, CO 80328. Printed in the U.S.A.

Coming in the April '98 issue!

Introducing a New Service to Readers...



www.macworld.com/getinfo

Macworld's NEW Online Reader Service

Introducing Get Info. Now you can get information on all the products and services you see in *Macworld*.

Only get it faster. Simpler. Better. Now. All you have to do is visit one site:

www.macworld.com/getinfo

Then select the products, product categories or advertisers for whom you want to receive information.

That's it. You can have the information delivered to you by e-mail, postal mail or even telephone. It's quick. Convenient. Fast. So next time you're interested in a product, don't get a stamp. Get Info.

The Desktop Critic

by David Pogue

Low Blows in Higher Education

YALE TEACHES US HOW MAC PHASEOUTS GO

JUNE 1997 WAS A TOUGH time to be a Mac fan. That's when my alma mater, Yale, sent a strange letter to every incoming freshman. "Dear Incoming Student," it said. "You are strongly encouraged to select a Windows PC, which was the choice of over 75 percent of first-year student computer owners in 1996-97. Owing to uncertainties about availability of software for Apple operating systems, the University cannot guarantee support for Macintoshes beyond June 2000."

To comprehend the enormity of that letter, you have to know what things were like at Yale *before*. In 1985, the university began selling Macs at a huge discount to students like me. (This was, you understand, back when Apple's market share was *zero* and there were only *four* software titles available.) Within a year, the *Yale Daily News* had switched to an all-Mac system, and by the late 1980s, every dorm room was wired for LocalTalk. In 1995, 75 percent of Yale students were Mac nuts.

So what changed overnight? As far as the national media were concerned, there was only one possible explanation: Apple had sunk so far, so fast that it had lost even its longtime stronghold, the educational market. "Bring money and clean sheets—but not Apple Macintoshes," *Business Week* gleefully paraphrased.

On campus, the Yale letter provoked an immediate, violent, and baffled response. Alumni, students, and faculty bombarded the *Yale Daily News* with letters to the editor. Who had sent that letter, and why? Where did those crazy "75 percent Windows" numbers come from? Since when does the university dictate what kind of computer its students use, anyway? How can Yale "guarantee" software availability for *any* computer beyond the year 2000? Why does Yale think that today's 14,000 Mac programs will disappear by 2000—especially when Microsoft

itself has promised to write Mac programs at least until 2003?

The Updegrove Phenomenon

Slowly, the answers came. Who wrote the letter? Daniel Updegrove, director of information technology services, who had arrived at Yale only a year earlier.

Which of Yale's students, professors, or graduate schools had he consulted? None. In fact, Updegrove's letter so misrepresented the university and its faculty that the grad schools tried to distance themselves. "I wish to assure you that the School of Medicine is taking a different

percent of 1996 freshmen came to school with Windows? When pressed, Updegrove conceded that his numbers were estimates. Of the 1996 freshmen who responded to a voluntary survey (less than half the class responded), 68 percent said they were running Windows, a figure Updegrove rounded up to 75 percent.

All right: so we have a scary letter to freshmen, based on fudged numbers, that doesn't accurately represent the university's position. Updegrove's reward was a hurricane of angry calls and e-mail from students, professors, the graduate schools, and alumni. Yet Updegrove's position has not changed.

All of which makes the biggest question loom even larger: *Why, Dan, why?*

Intel Getting Inside

Donna Ladd, writing for the online edition of the *Mac Home Journal*, offered one possible answer. She noticed a strange coincidence: the same week Updegrove mailed his letter to freshmen, he also applied for a highly competitive grant from Intel, which planned to give 25 colleges \$90 million worth of free stuff. The grant application clearly stated that "a strong preference will be given to proposals that stress the use of Windows NT."

Yale and Intel swear up and down that Updegrove's anti-Mac initiative wasn't a ploy to kiss up to Intel, which insists that it wants to buy its way into high-end research labs and grad schools, not undergrads' desks.

OK, I'll bite. So let's say visions of free toys *were* dancing in Updegrove's head. Then what did drive him to write that letter? Does Yale have special mainframe software that only Windows front-end software can access? Nope. "I am not aware of any client-server systems that



position," announced its dean. (Updegrove later tried to mollify the med-school staff at a special meeting. However, as Assistant Professor Mark Shlomchik, Ph.D., puts it, "Updegrove didn't seem to get basic ideas, such as his office is here to serve the computing needs and preferences of students and faculty, not dictate to us our platform." The meeting ended abruptly when the 60 faculty members simply walked out on Updegrove.)

But what about that statistic repeated in every article on the Yale flap—that 75

continues on page 185



Director 6



Flash 2

Invite 3 million people over
for a game of one-on-one.

The Web is about competition. The winner gets the attention of an audience as large as your company, or perhaps, the world. CBS Sportsline did it with a unique basketball game using Macromedia® Director®, the industry standard for ultra-deep interactive Web and multimedia content. Or go to Macromedia Flash™, to easily add animation, motion and sound to any Web page. Both now support Java™ playback for viewing without plug-ins in any arena.

Visit <http://special.macromedia.com/df/mw> for a FREE demo or to buy online. Or call 1 800 945-4049. Let's see what you've got.

Circle 37 on reader service card



© 1998 Macromedia, Inc. All rights reserved. Macromedia and Director are registered trademarks and the Macromedia logo and Flash are trademarks of Macromedia, Inc. Java and Java-based trademarks and logos are trademarks of Sun Microsystems, Inc.

NEWS FLASH
Apple's
Surprise
Profit
page 25



Leadership by example.

You don't lay claim to leadership. Rather, you set an example that others will follow.

From the beginning, Turbo Mouse has set an example unmatched by any other input device. An example that has earned Turbo Mouse more awards than any input

device in Macintosh history. An example that has led Macworld to recently proclaim that Kensington's Turbo Mouse should be "at the top of everybody's short list of trackballs to consider."

For more information, call 800-535-4242.

KENSINGTON®

www.kensington.com



Turbo Mouse and Kensington are registered trademarks of Kensington Microwave Limited. All other trademarks are the property of their respective owners. © 1997 Kensington Microwave Limited 9/97

Circle 12 on reader service card